NOLOGY DEPT.

Gas Journal

Vol. 272. 104th Year. LONDON, OCTOBER 22, 1952. No. 4664. Price 1/3
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The NEW

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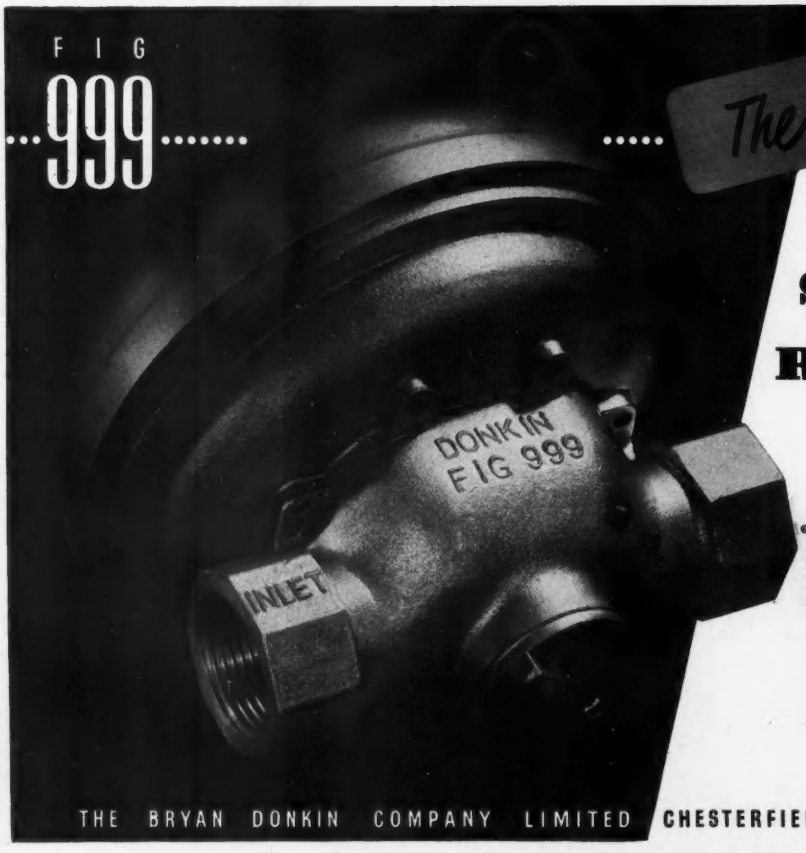

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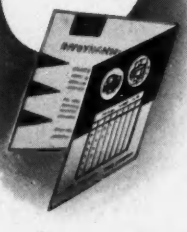
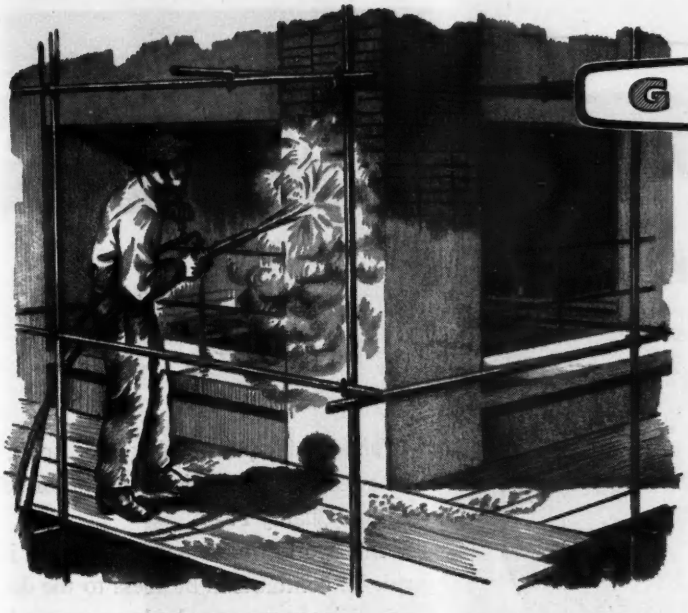


THE BRYAN DONKIN COMPANY LIMITED CHESTERFIELD · LONDON · MANCHESTER



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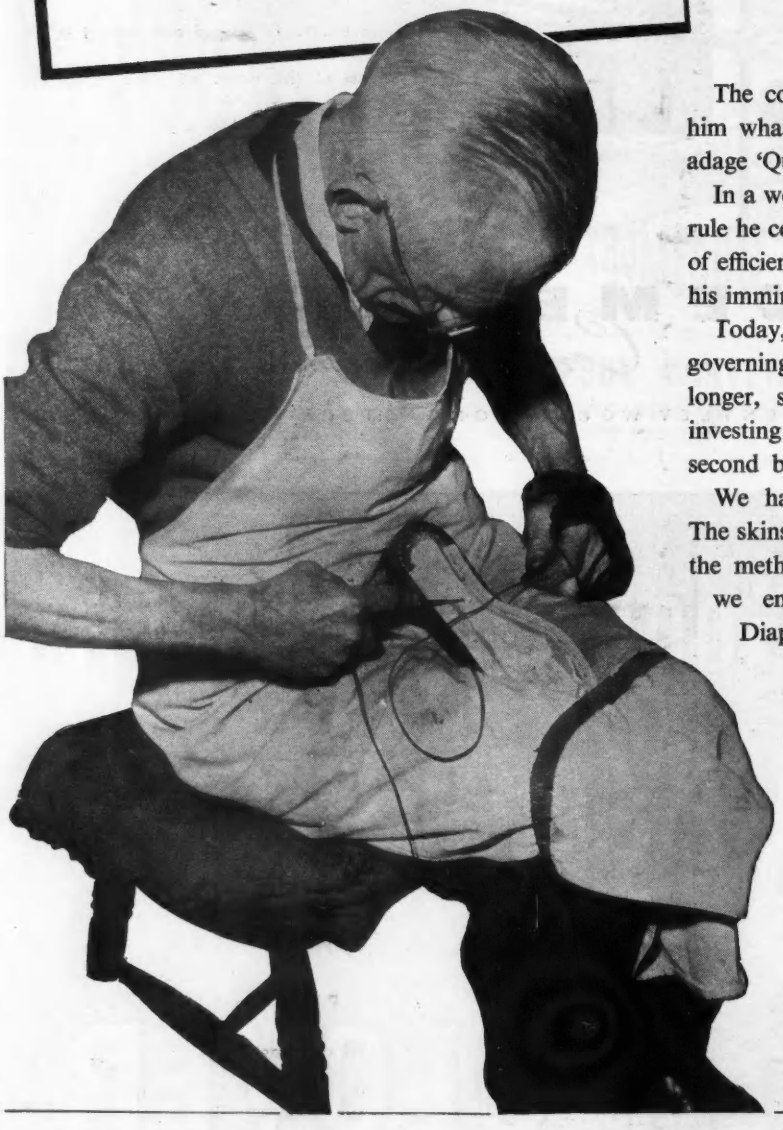

The cobbler, shoe maker or snob, call him what you will, is living proof of the adage 'Quality Pays'.

In a world where mass production is the rule he continues in business to the despair of efficiency experts who long ago predicted his imminent eclipse.

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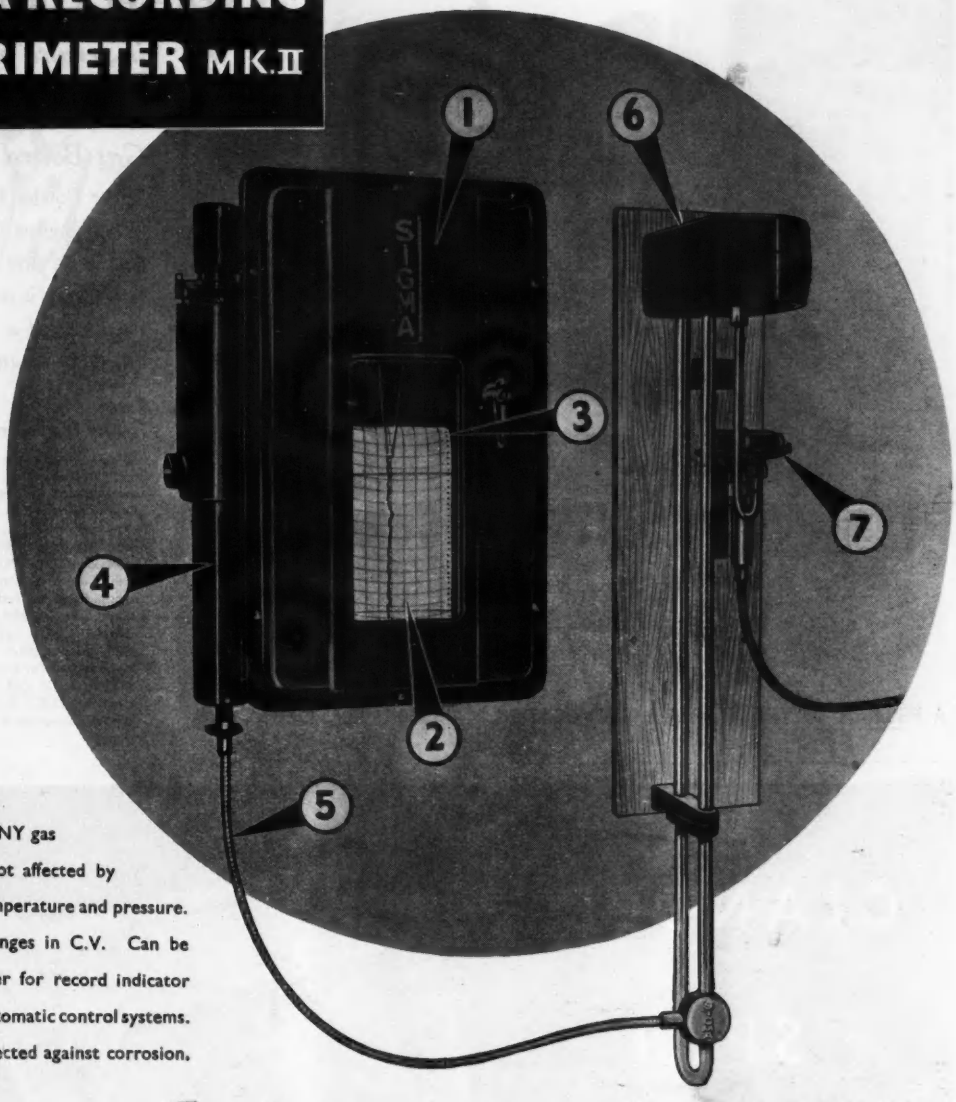
SIGMA RECORDING CALORIMETER MK.II



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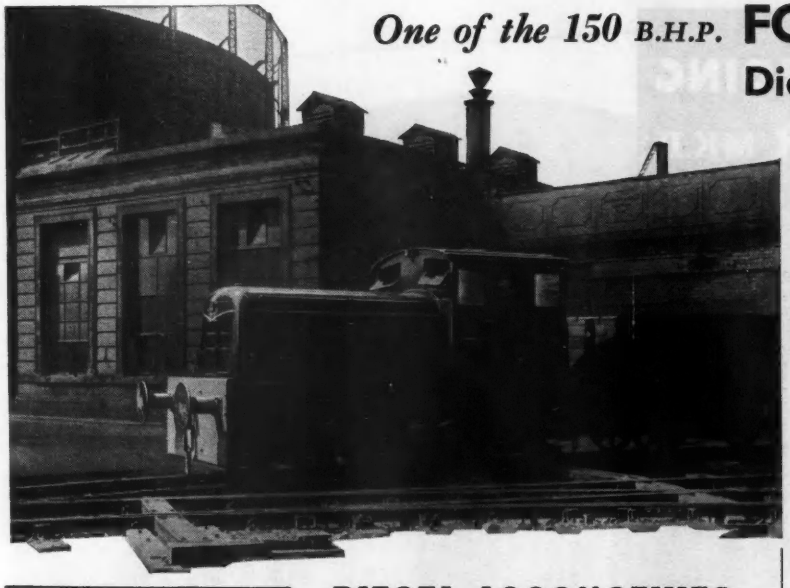

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These Fowler Diesel Locomotives move wagons in the yard quickly and with the utmost economy. Full power is instantly available at the touch of a button: no steam raising, no stand-by losses.

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Whatever the attraction, rugby, soccer, or some quieter game, in an unseen corner—close at hand —a gas meter is carrying out its life long task. Often it's a Wilson.

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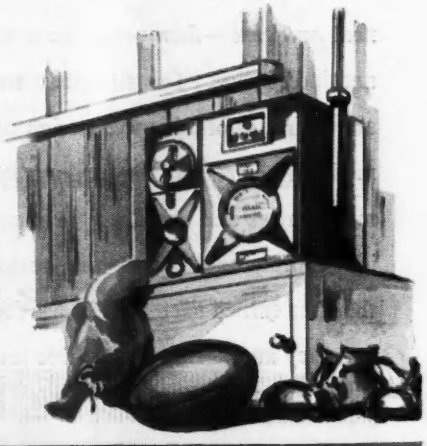

GEORGE WILSON
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BEGWACO
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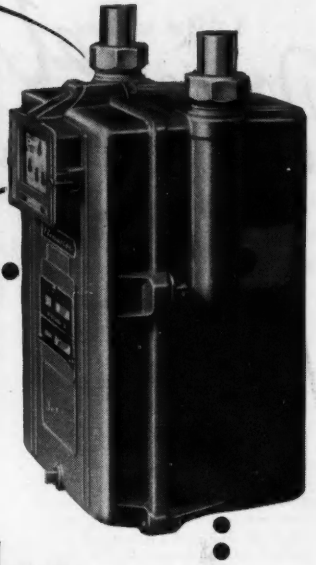

Three sides to the two-part case

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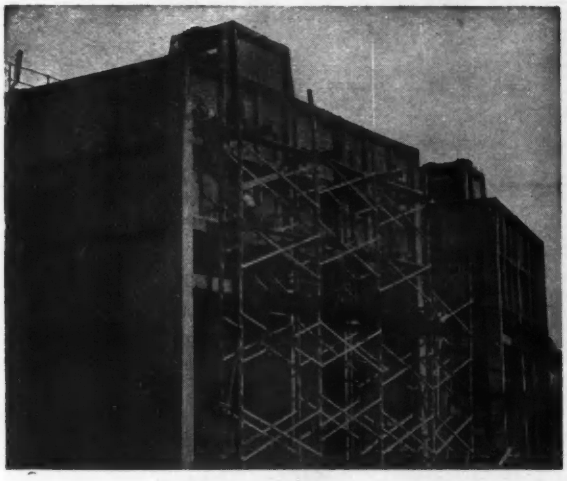

One of the reinforced concrete structures reconditioned with Gunite for the City of Carlisle Gas Undertaking.

Gunite—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have exceptional value.

For repairing reinforced concrete it has particular merit, as, due to the method of application, a uniform density and adherence is obtained whenever Gunite is applied

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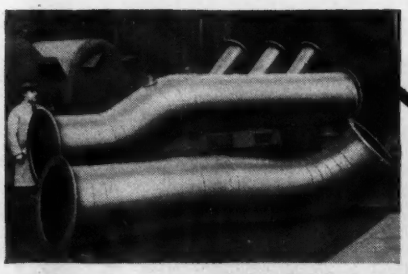

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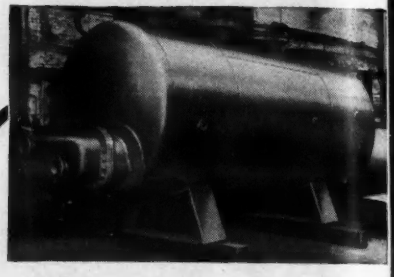

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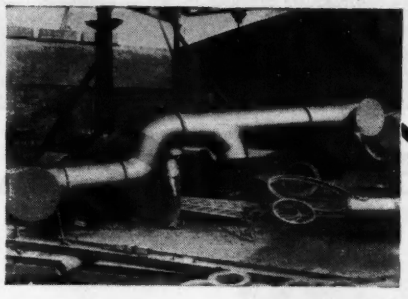

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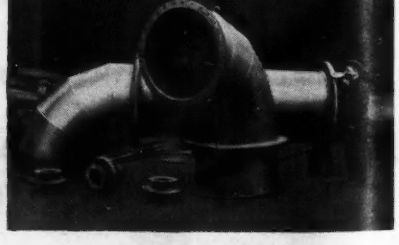

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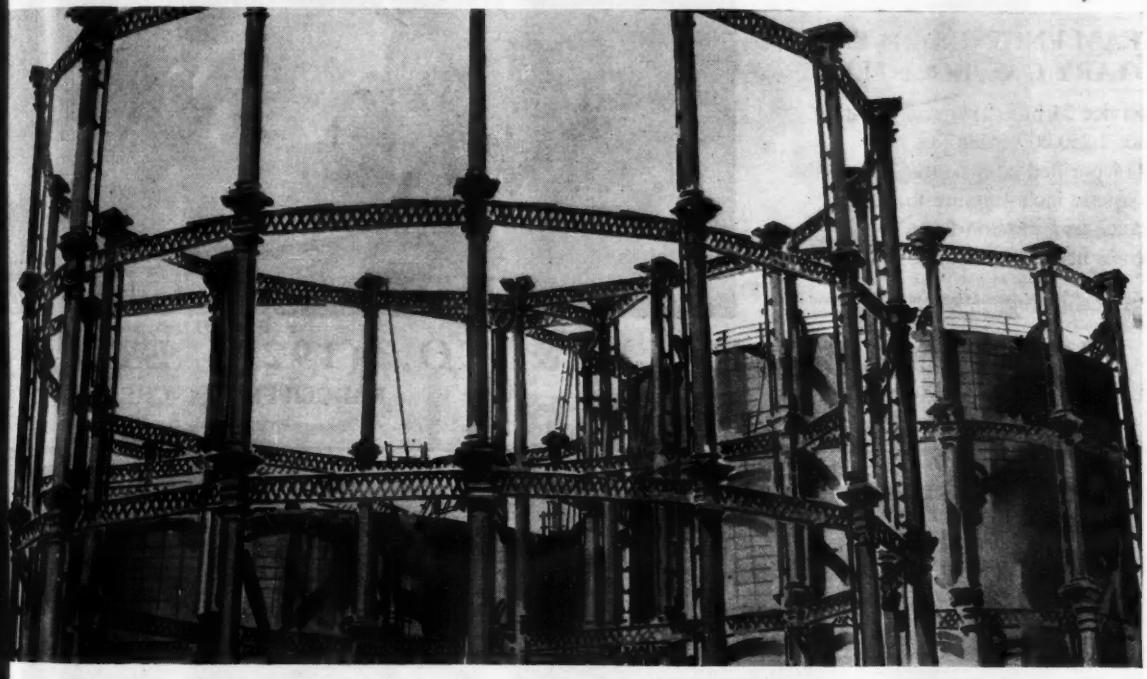

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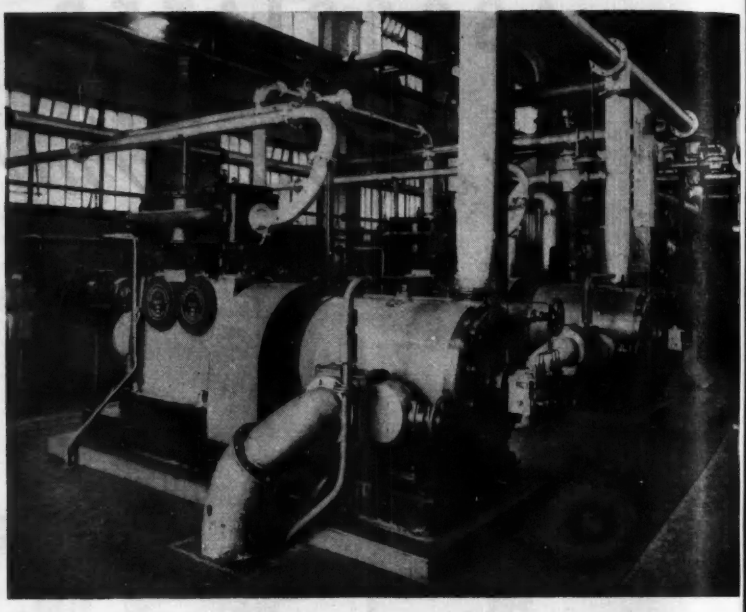

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in service 24 hours per day boosting about 1,250,000 cubic feet per day of purified coke oven gas to 13 lbs. per square inch pressure for long distance transmission from Bircotes near Doncaster to Worksop.

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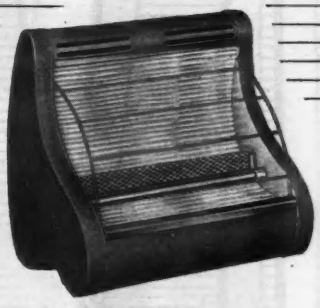

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5,000 B.Th.U. per hour. The most efficient portable built. Gold finish.

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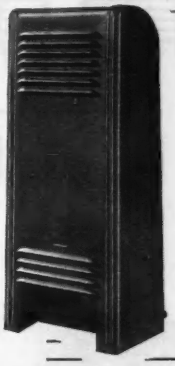
5,000 B.Th.U. per hour. Amber glass panel at base. For Shops, Offices. and the Home. Bronze finish.



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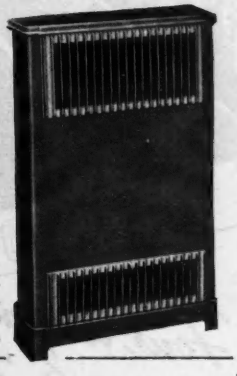

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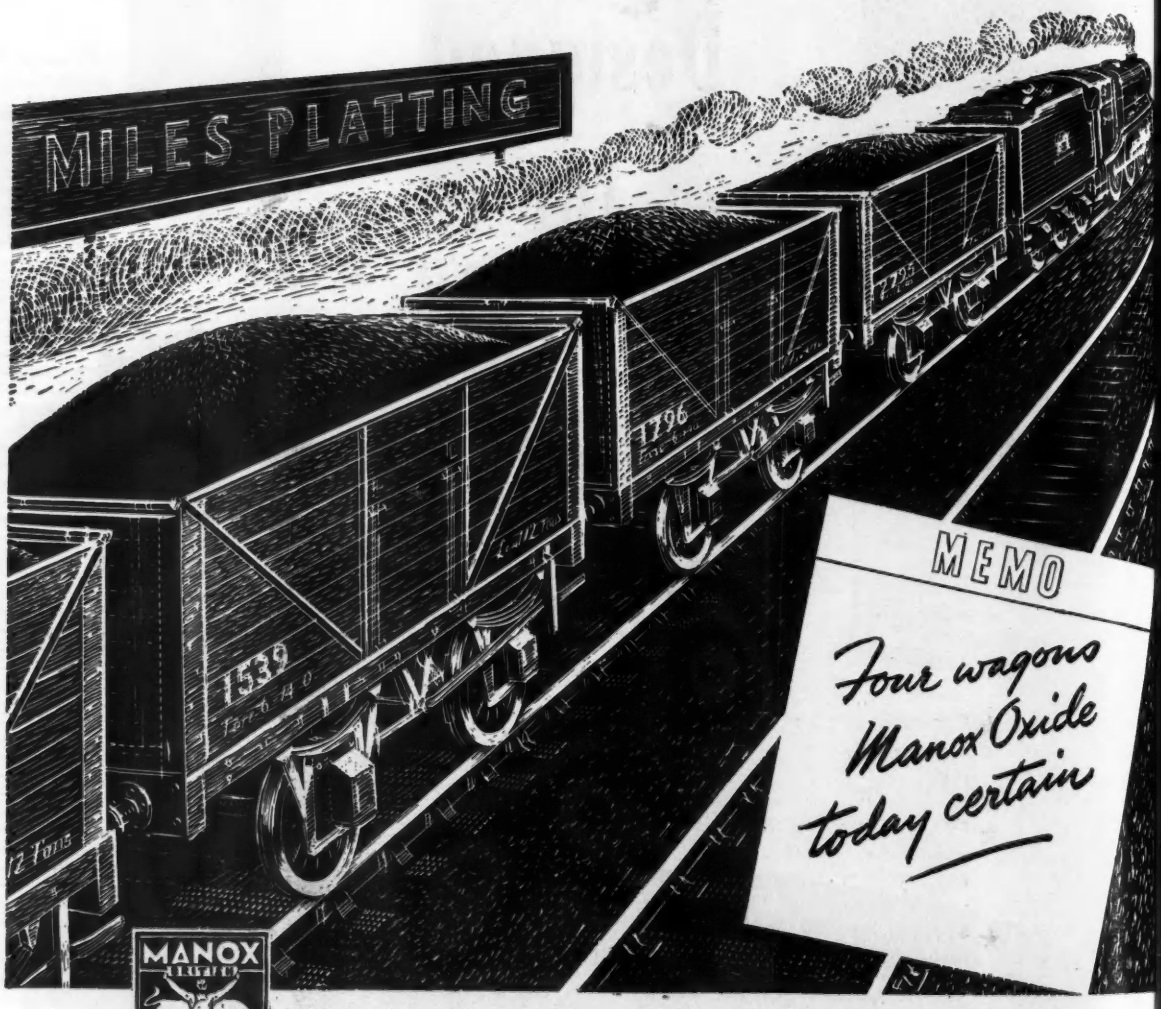

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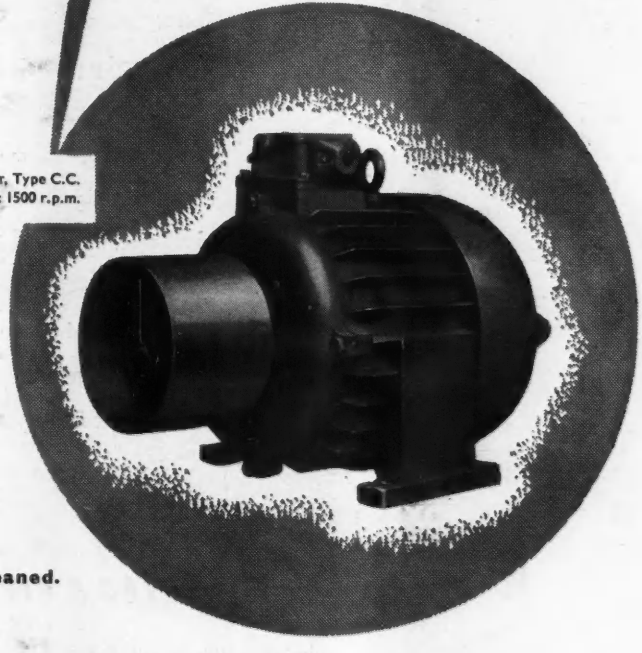
G.E.C. Squirrel Cage Motor, Type F.C.
For outputs up to 500 h.p. at 750 r.p.m.

G.E.C. DUSTPROOF MOTORS



G.E.C. Squirrel Cage Motor, Type C.C.
For outputs up to 50 h.p. at 1500 r.p.m.

- ★ Completely sealed against coke and carbon dust prevalent in Gas Works.
- ★ Efficient ventilating system enables dimensions to be reduced to a minimum.
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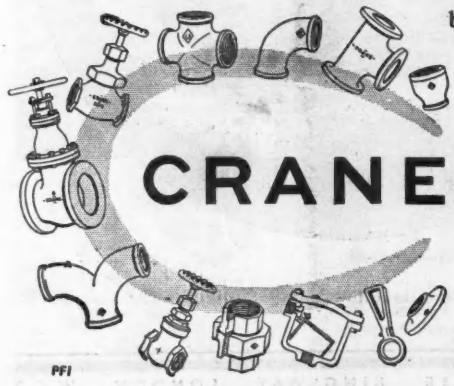
It's the little things that count

If ever you've been made miserable, had your progress halted, by an infinitesimal insect drowning in your eye—you'll agree that 'it's the little things that count.' In your factory, a loose joint, a corroded nut, a leaking valve, a fractured pipe, a faulty thread—any little thing like this can annoy and delay as much as any major failure. It is because Crane realises that little things often carry big responsibility that Crane products are so reliable. Crane sets its own high specification for all raw materials. Crane subjects its products to sample analysis; to chemical and physical tests in its own laboratory; checks for soundness. The stock position is difficult but try Crane first—you may be lucky.



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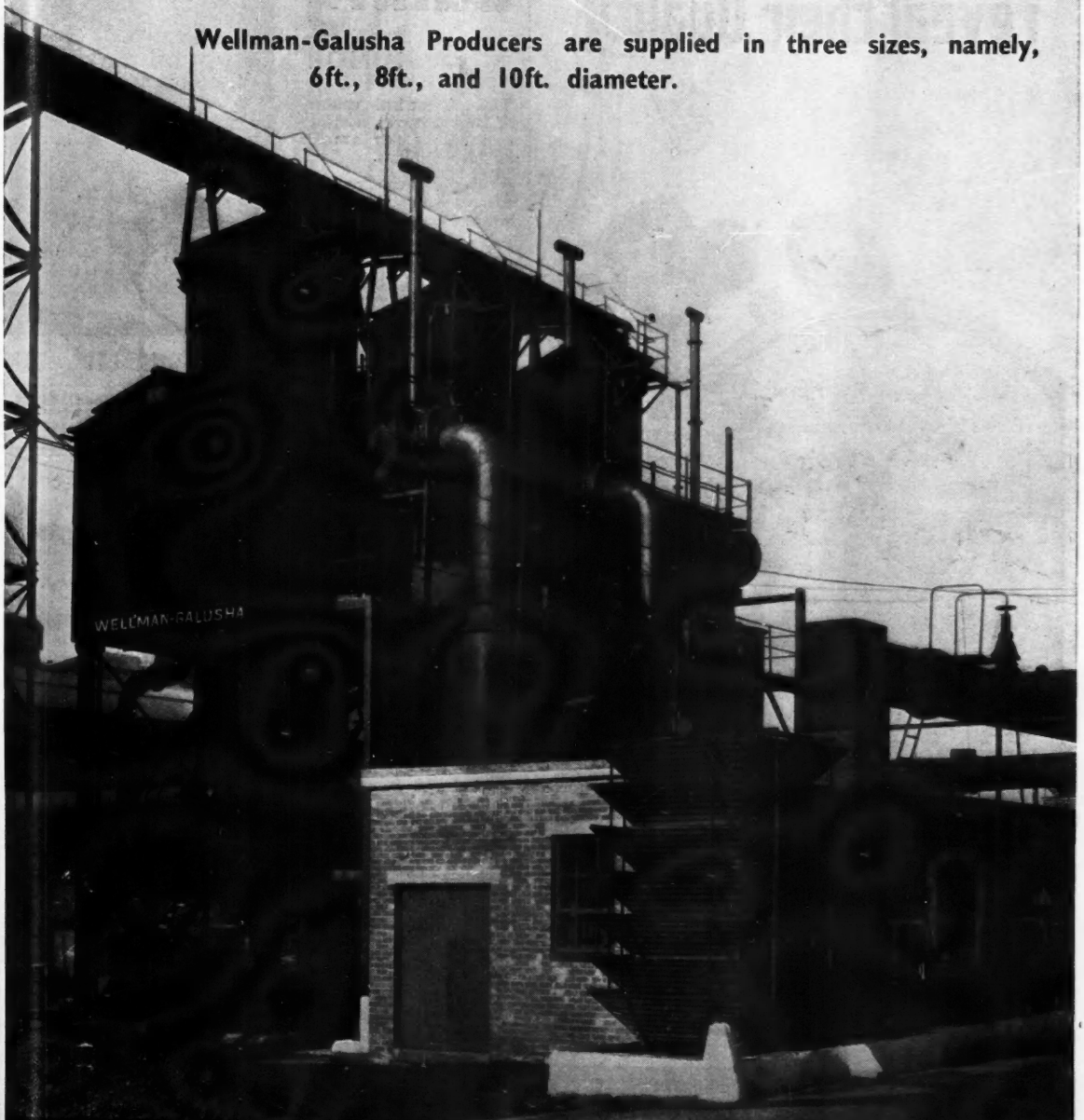
Wellman-Galusha Gas Producers

generate

High Quality Gas from Low Grade Fuels

A battery of three 8ft. diameter Wellman-Galusha Gas Producers, equipped with fuel storage bins and Gas Cleaning Plant, for the efficient gasification of anthracite, coke or coke breeze.

Wellman-Galusha Producers are supplied in three sizes, namely, 6ft., 8ft., and 10ft. diameter.



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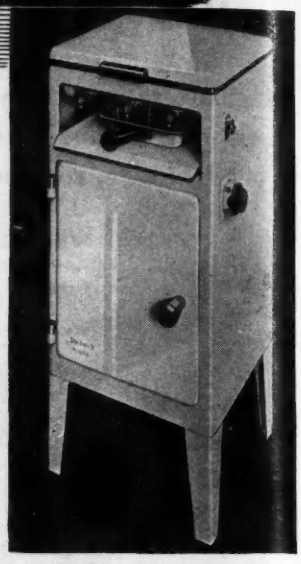
Small kitchens and flats



The **Dainty** MINOR

This efficient little cooker of large capacity is made especially for small kitchens and flats.

Its cast iron construction ensures durability and low maintenance cost.

For hire purchase or for simple hire the Dainty Minor is ideal.

Approved and adopted by leading gas boards.

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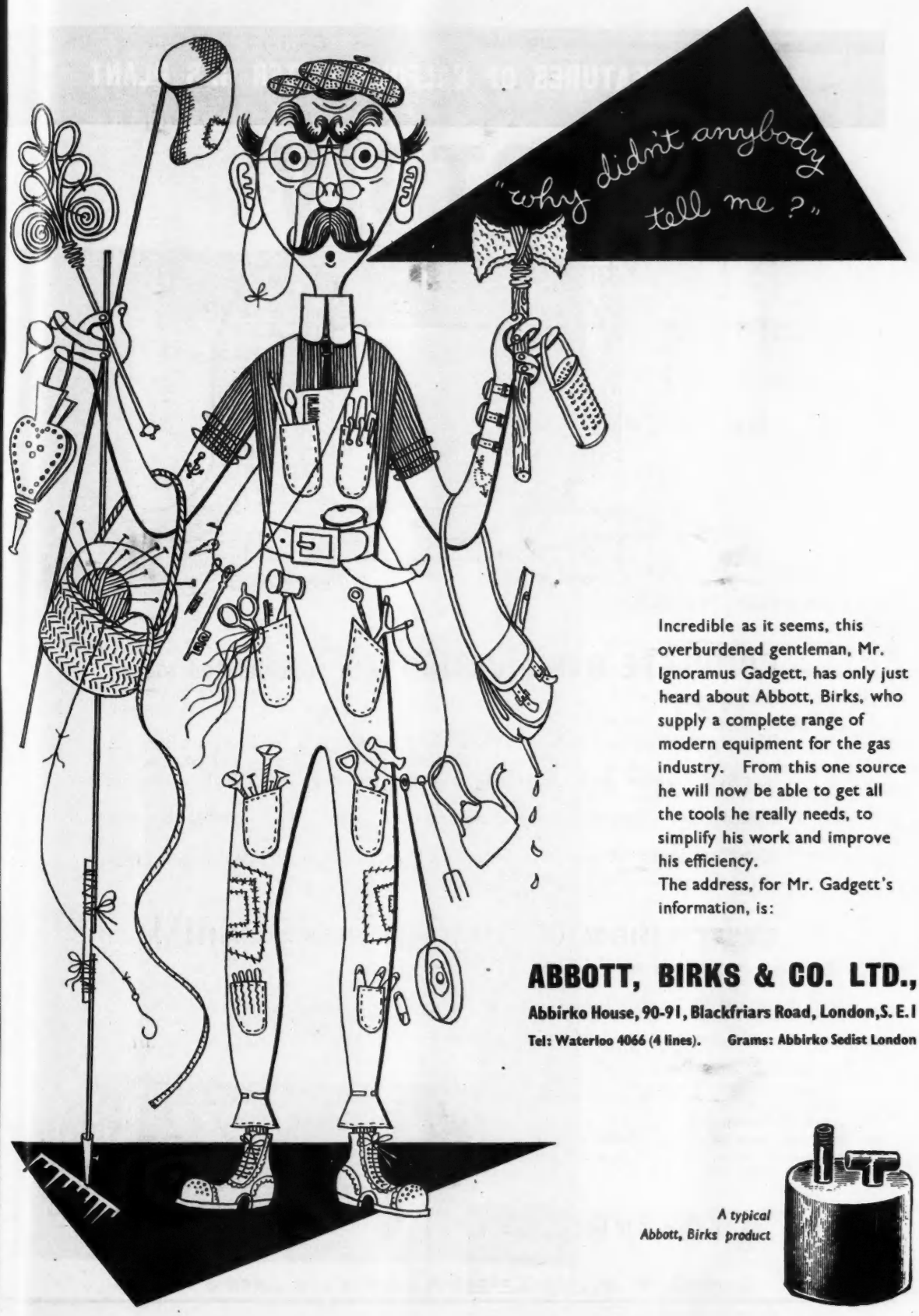

Incredible as it seems, this overburdened gentleman, Mr. Ignoramus Gadgett, has only just heard about Abbott, Birks, who supply a complete range of modern equipment for the gas industry. From this one source he will now be able to get all the tools he really needs, to simplify his work and improve his efficiency.
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A typical Abbott, Birks product

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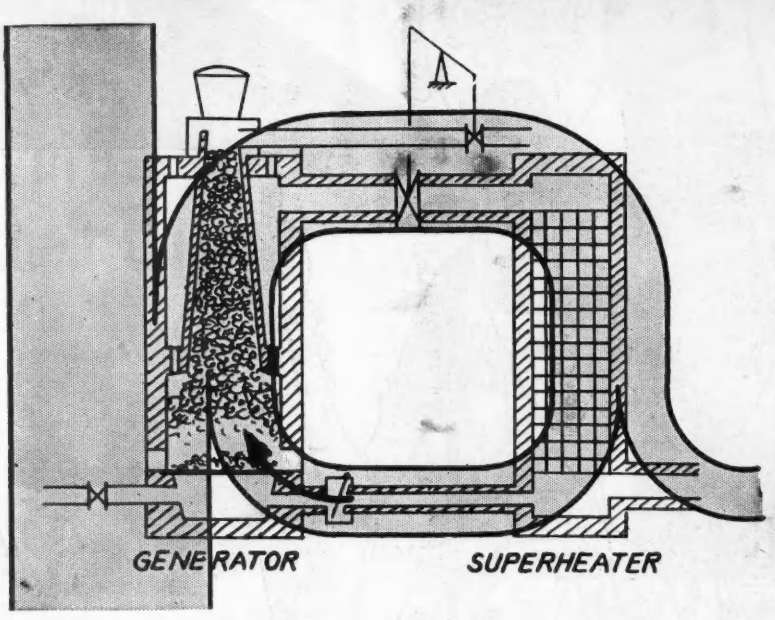

COMPLETE GASIFICATION with superheated steam

The superheated steam in Balfour Water Gas Plant returns a good proportion of the heat from the blow gas back to the process. This results in both a high gasification efficiency and a high calorific value of the gas produced. The superheated steam allows gasification in only one direction. This simplifies the plant considerably.

HIGHEST GASIFICATION EFFICIENCY . HIGH CALORIFIC VALUE

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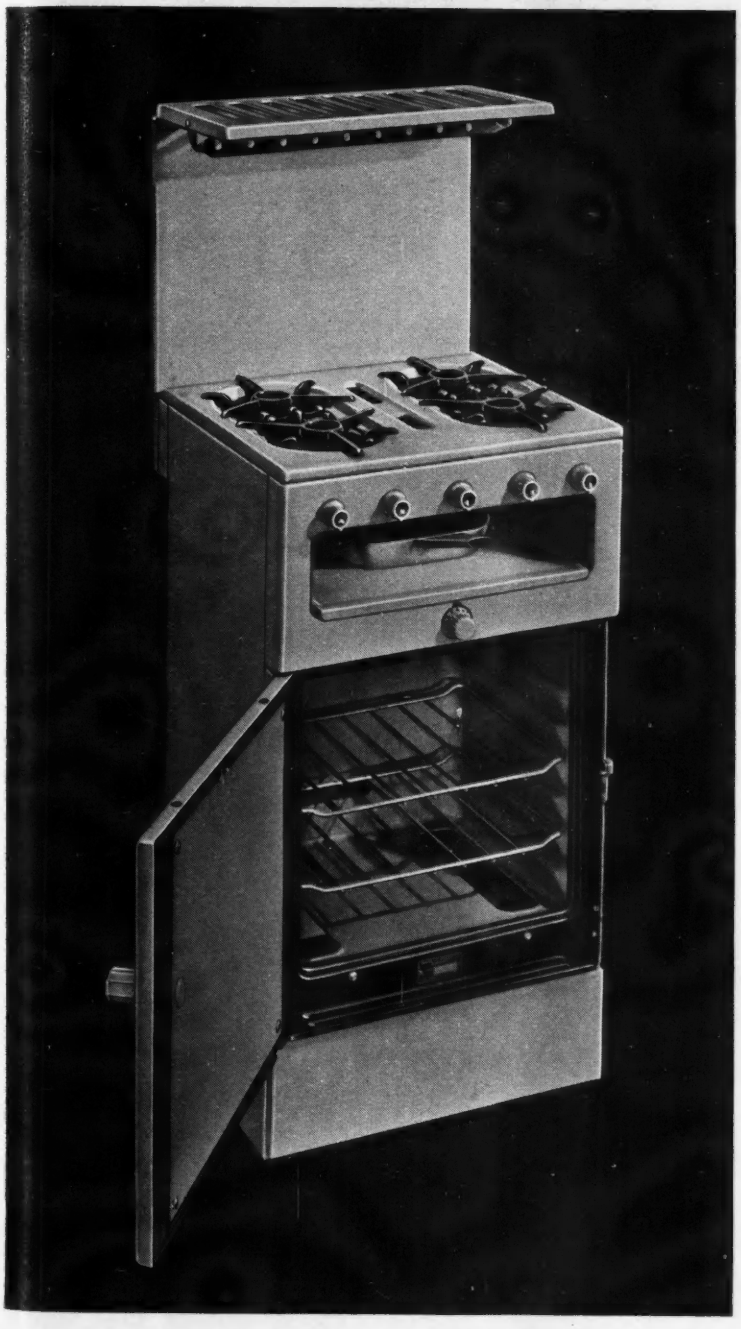

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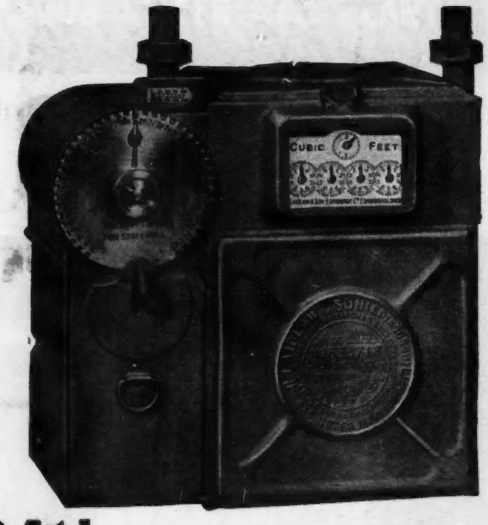

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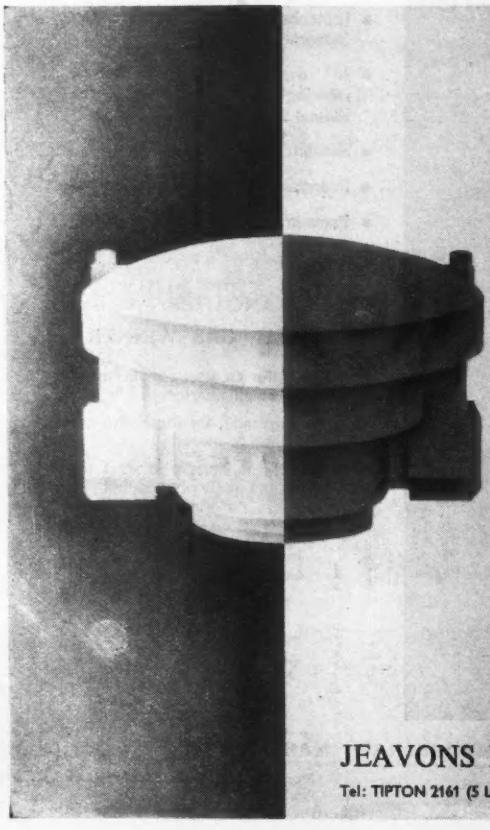

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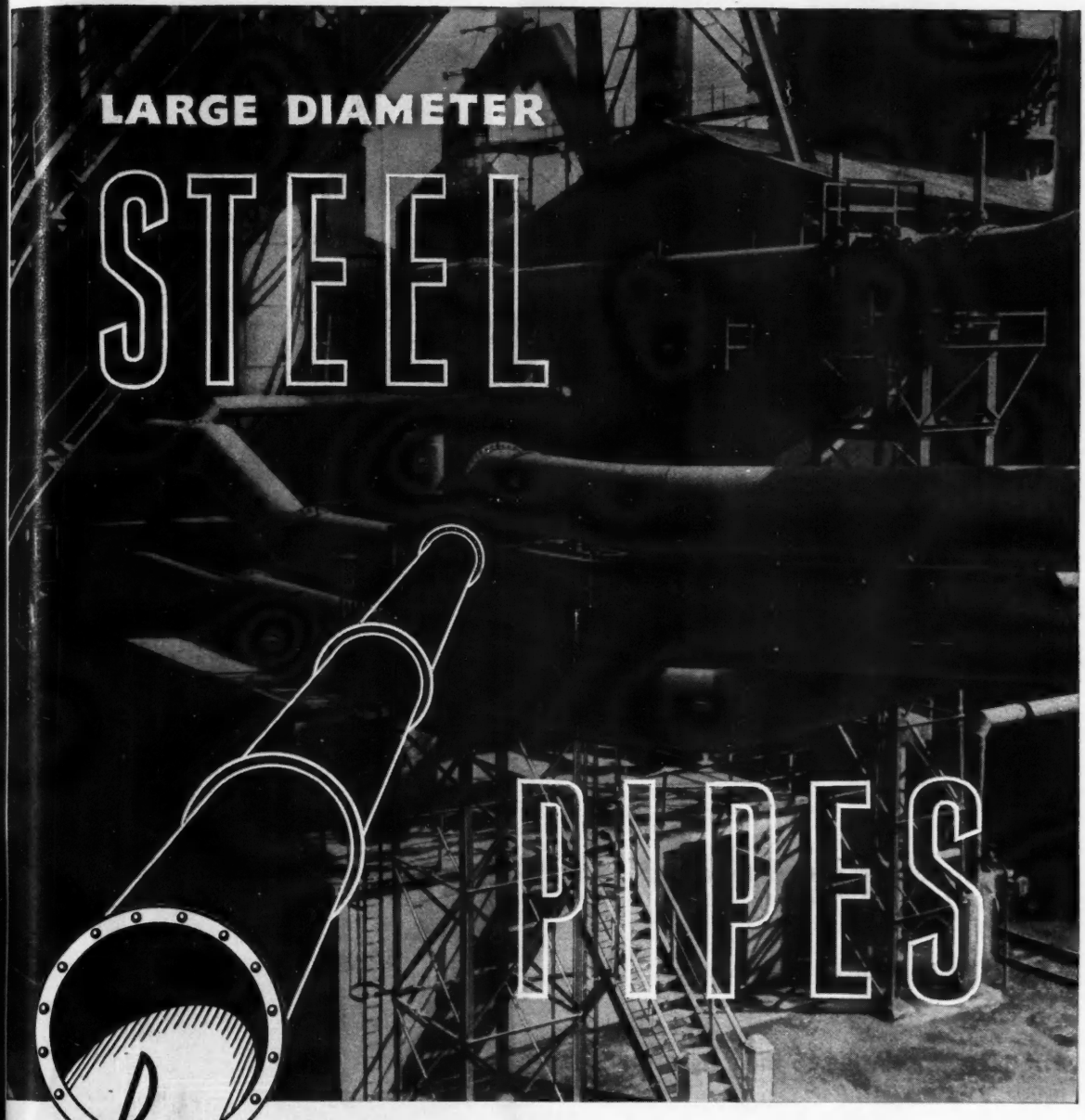

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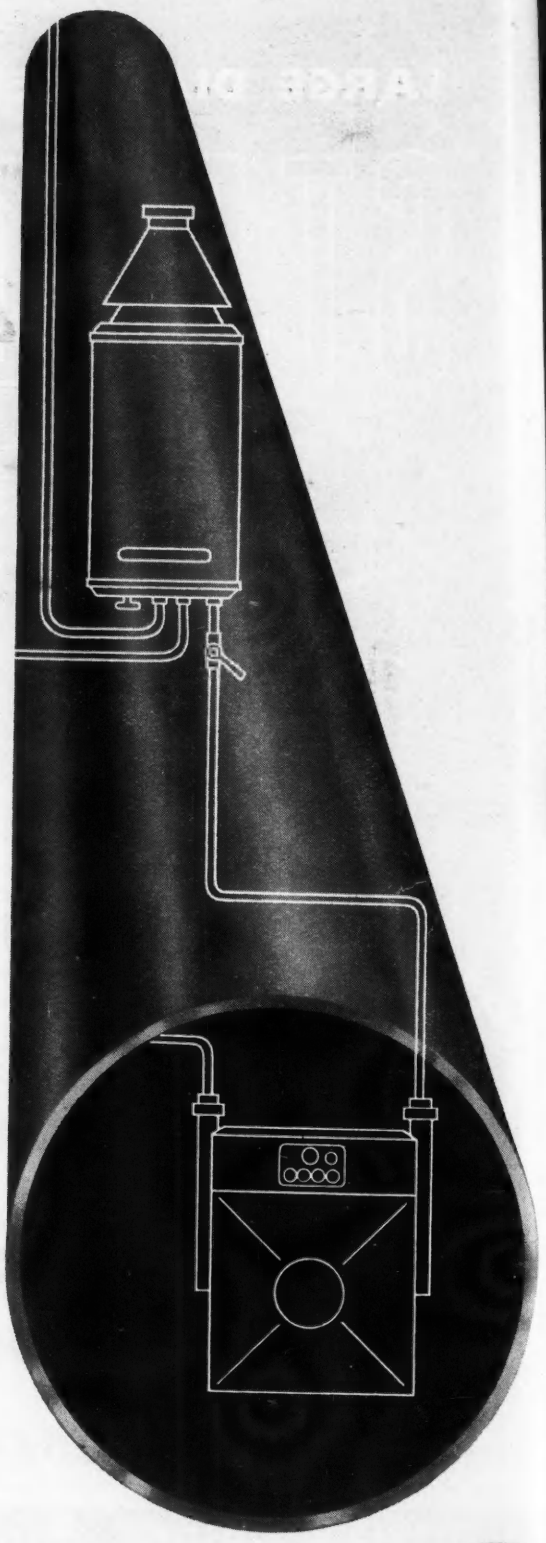

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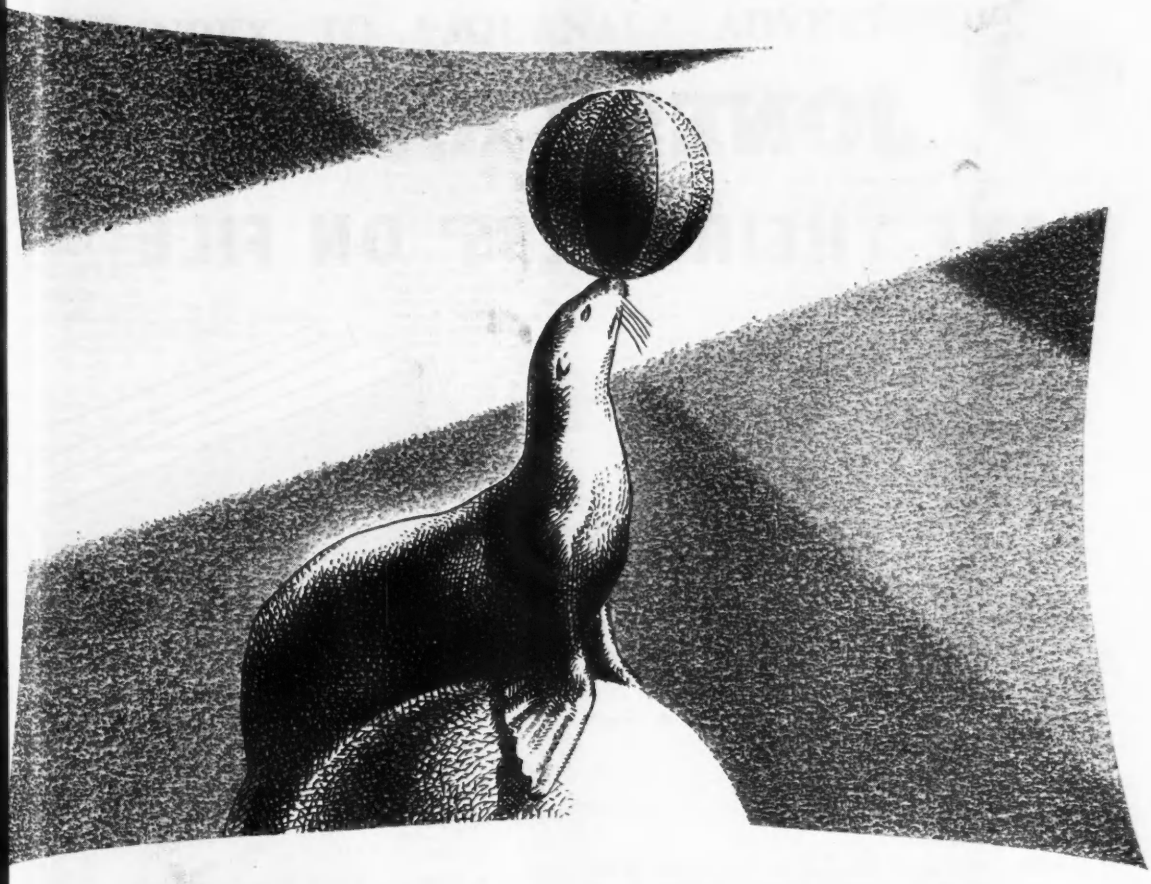

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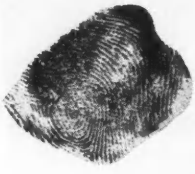

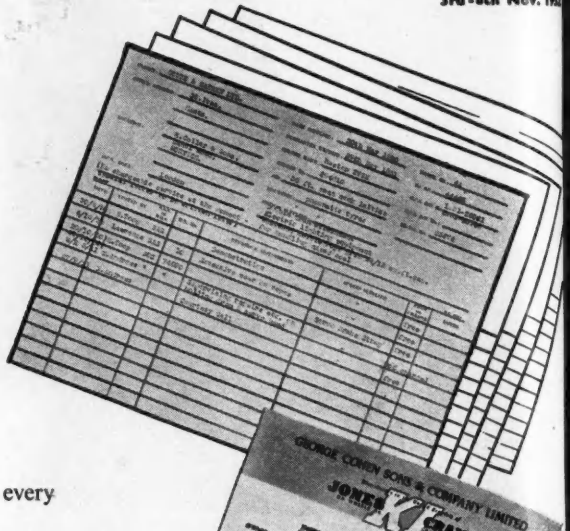

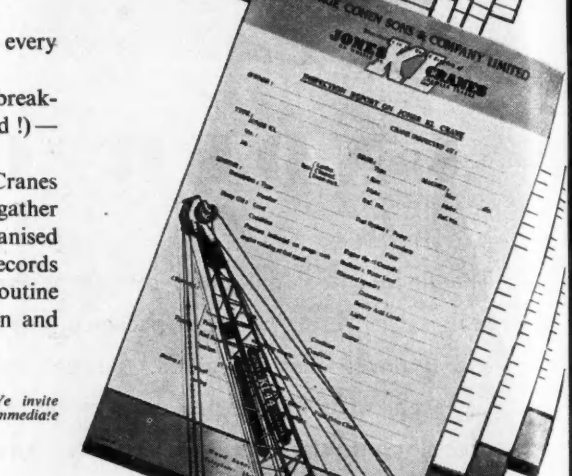

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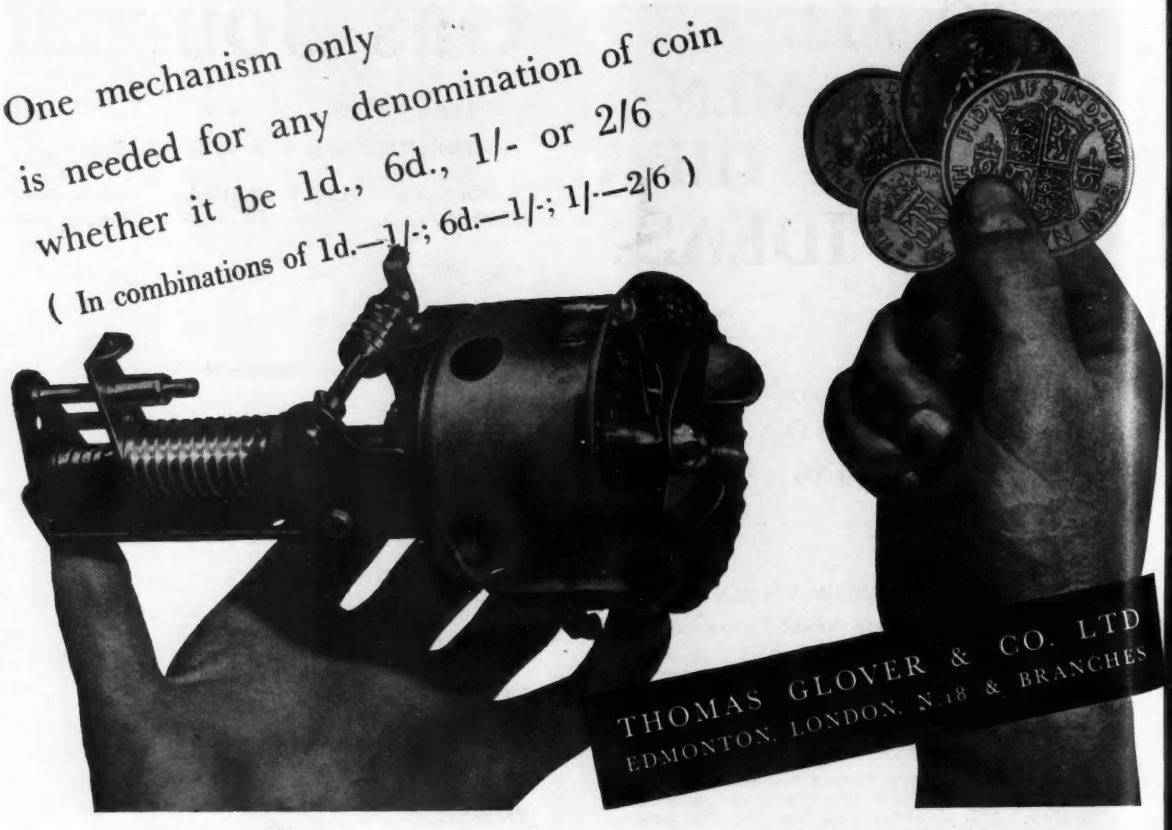

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VOL. 272. No. 4664 104TH YEAR OCTOBER 22, 1952

NORTH WEST GAS GRID

JUST over a year ago we had the opportunity of examining the scheme of development in the highly industrialised area of the North Western Gas Board, the success of which, we said at the time, called for enlightened policy, experience in integration, encouragement of skilled effort, and co-operation at all levels. Under modern conditions gas supply demands integration of area, of distribution system, of manufacturing plant, and of sales policy. All these elements have their place in the 15-year plan of the North Western Gas Board, through whose courtesy we were able last week to gain a further first-hand impression of the progress which is being made and the difficulties which through planned action are being met and overcome. The Chairman of the Board, Mr. D. P. Welman continues his energetic policy in uniting a heterogeneous, highly individualistic area.

The progress made is indeed marked, and were it not for the steel position, which everybody hopes will ease next year, the rate would have been accelerated. The basis of the plan is interconnection in the South Lancashire industrial belt allowing the interchange of gas supply from manufacturing stations tuned up to efficiency and making the most of their base load potential—*i.e.*, evening-out as far as is possible the peak loads. For example, one district may have a preponderant industrial demand for five days of the week, with small demand during the week-end. A contiguous district may have its peak demand during the week-end. Herein lies an obvious opportunity—now that parochial barriers of gas supply have been swept away—for interchange of gas supply and for increased base load and hence more efficient and economical working. The plan has already altered the picture of gas production and supply in the North West industrial belt; and, of course, much remains to be done. All this costs money, but the Board is convinced that the potential demand is such as fully to justify the expenditure estimated at current prices at between £35 mill. and £40 mill. There is, too, the over-riding aspect of service. We feel sure that the completion of the plan, which is essentially flexible according to circumstance and new knowledge and experience, will witness a wholly remarkable change for the better in gas supply to home and industry.

On later pages we record our intensive tour of inspection of the Board's planning, production, and distribution department and the Partington and the Radcliffe works. Partington represents a key manufacturing station in the Manchester area, and, as will be gathered from our account, the plant is varied and flexible. Present capacity of the works, which occupies a site of 176 acres alongside the Manchester Ship Canal some nine miles from the centre of Manchester, is 19 mill. cu.ft. daily; this will be increased to 24 mill. cu.ft. daily in the middle of next month when a new Woodall-Duckham retort house is brought into operation. Two coke oven plants are to be added, each with a capacity of 15 mill. cu.ft. a day. Thus the planned capacity at Partington is 55 mill. cu.ft. a day. This key works is connected with a grid which at the moment interlinks 45 towns in the North West. The Radcliffe works is a typical small undertaking having a distributing system covering 20 sq. miles; it was on the programme of our visit as exemplifying how such a works, brought up to date and operating to capacity throughout the year, fits into the composite scheme of integration, yielding results economically.

We have indicated the foresight and energy which are being displayed in the engineering field in the large area governed by the North Western Gas Board. Other aspects of the work of the Board are being tackled equally energetically and certainly to good purpose. We refer particularly to the matter of human relationships and the steps which have been and are being taken to ensure a contented and a healthy team of workers. Amenities on the works are being increased with the provision of new plant and great attention is being paid to medical services. The third annual conference of the Board was held at Blackpool on October 10 and 11, and from our special report of the proceedings on later pages it will be seen that these vital problems were included in the subjects discussed at the conference.

CONTINUOUS VERTICALS IN IRELAND

IRISH gas engineers are to be warmly congratulated on the initiative and skill they have shown during the last 40 years—in the first place on the prompt acumen they showed in the second decade of the century in the adoption and adaptation to their particular requirements of the then newly introduced continuous vertical retort and in the last decade by the courage and tenacity with which they have grappled with the problems arising out of the appalling shortage of coal and its terribly poor quality incidental to war conditions. They saw very early that in a country where practically all coal has to be imported that type of carbonizing plant was to be preferred which could be operated to give economically and above all flexibly the greatest quantity of gas per ton of coal imported. Over the years the continuous vertical retort has proved the most effective instrument in their hands.

In the paper he recently presented to the Irish Gas Association, Mr. J. T. Bradshaw described the extraordinary pattern of the Irish gas industry. In a total of 49 gas undertakings 31 have an annual output less than 50 mill. cu.ft. There are two undertakings, those of the two capital cities, with capacities over 4,000 mill., with only one (at 680 mill.) between them and the 400 mill. mark. The continuous vertical retort is to be found taking the main load in no fewer than 13 of the 18 undertakings above the 50 mill. level. In Eire, particularly, it has been called upon to deal with several 'atrocious substances,' reputed Durham slack with 44% ash content, 'slurries dredged from coaling basins, washery gums, and wet duff which arrived as a thick sludge,' as well as the indigenous peat. As usual the greatest problems arose out of abrupt changes in the character of the fuel supplied. To adjust plant to any given type of coal or other combustible may be a difficult task—to re-adjust it at short notice may be nearly impossible. Those then are the conditions under which the gas engineer in Ireland has had to work over several years.

The Glover-West retort is not the only continuous vertical retort in successful operation in Ireland, but it was natural that Mr. Bradshaw's detailed observations were confined to this, the system with which he is personally and honourably connected. The brief story which he gave of developments at Belfast is a history of the development of this system over the last 40 years. This great works is a monument to the wisdom in policy and ability in engineering achievement of Mr. J. L. Hyslop and his predecessor, the late Mr. J. D. Smith. The ability of the C.V.R. to produce gas at a greater rate per unit of area than any other available systems is nowhere so strikingly demonstrated. It saved the city from the tremendous expense of moving its works away from a long-established site with incomparable facilities for receiving water-borne coal from Great Britain. The recent development of coal handling plant to and on the works is an outstanding engineering feat. The problems and achievements at Dublin are no doubt comparable—the story should be one of great interest and profit when it is given to some future meeting of the Association.

The story of the installations of medium size is one of enterprise and development with less financial backing. Everywhere was the necessity to keep cost down and yet to gather as much as possible the fruits of mechanical equipment. Mr. Bradshaw's discussion of the value of duplication will be read with interest. Standby plant is all very well if it does not stand by too long. The provision of adequate coal and coke storage within the retort house can generally provide sufficient time for maintenance. Substantial design in the first place and efficient maintenance thereafter may often cost less than standby plant which may not function satisfactorily when called upon. Very often capital is better laid out in providing access to vulnerable parts, particularly lifting gear, than on a duplicate line of plant which in a medium-sized plant may lead to congestion and difficulty in dealing with emergencies.

Mr. Bradshaw dealt with alternative gas-making methods directed to meeting the peak load. The position of the carburetted water gas plant in works of sufficient capacity is unchallenged. But in the very small works, from 50 to 150 mill. cu.ft. annual capacity, the flexibility of the C.V.R. has been used with success to deal with this problem. The two sets of output graphs which Mr. Bradshaw exhibited show how in a few hours the output of a small plant can be varied over a very wide range. The property of flexibility is not by any means as well understood as it might be. There are cases of load fluctuation in works of quite considerable size which could be dealt with in this way far oftener than they are. It is one of those instances where the 'blend of art and science' is called for. At any rate no one will dispute Mr. Bradshaw's claim that in the recent history of gas-making in Ireland we see the results not only of such a blend but of unprecedented friendly co-operation between designer and user.

WEST'S GAS

THIS unique house journal has now settled down to a quarterly issue of rather more substance than the preceding bi-monthly. We have already published an excerpt of the article describing the Nanterre works of Gaz de France with particular (and natural) emphasis on the Glover-West vertical retorts installed in a novel setting with 'compound' heating. Other features are a brief account of the origin and history of Church House (the venue of the Institution June meeting this year), a review of the Works Committee and the Joint Production Committee as operated at the head works of West's Gas Improvement Co., and a semi-serious discussion of the origin of the place name Miles Platting which must have intrigued many of us. Examples of the work done by West's Piling & Construction Co. (this time for the British Electricity Authority) and of work in progress by the parent company with references, a brief bibliography of current literature of interest to carbonising engineers, are regular features. 'Company News,' addressed to the company's own employees, contains a London Letter for the first time. The journal is admirably produced and is printed on semi-art paper which does full justice to the excellent illustrations.

STAFF PENSION SCHEME

An early announcement is expected concerning a staff pension scheme for the gas industry. *Thermfare*, journal of the British Gas Staff Association, has reported that the draft scheme has been revealed in confidence to the staff side of the National Joint Council for Gas Staffs which, together with the officers' side of the Senior Gas Officers' Joint Council, has studied the draft and has met representatives of the Gas Council. Suggestions have been made to the Gas Council, but until the scheme in its final form has received the approval of the Ministry of Fuel and Power the details may not be divulged. Meanwhile, we have read with interest in the *Thames Gas Magazine* of the North Thames Gas Board a summary of the actuary's report on the valuation and investigation of the Gas Light and Coke Company Officers' Superannuation Fund at the end of 1950. Members in service increased from 3,262 in 1946 to 3,770 in 1950, and pensioners increased from 547 to 733. The actuary notes that the rates of retirement at ages below 60 were similar to those in previous valuation periods; on the other hand there was an increased tendency for members who remained in service to age 60 to retire fairly soon after completion of 40 years' service. The valuation disclosed a surplus of £36,372, a small figure in relation to the size of the fund. During the period between the valuations the former Company and the Board made substantial special contributions in reduction of the deficiency which existed at the date of the previous valuation. In addition it is proposed to make further special contributions of £70,000 a year for 17 years to liquidate the remainder of the deficiency. The present surplus arises on the working of the past quinquennium and is mainly due to the comparatively large profit from withdrawals, which was sufficient to cover the cost of the slightly higher level of salaries and of the more prompt retirement of members who attained the age of 60. Though the position at the end of 1950 was satisfactory, it is pointed out that further increases in salaries will cause a deficit which may necessitate additional payments by the Board in the future in order to maintain the fund in balance.

A TECHNICAL POINT

There appears to be doubt in the gas industry as to the wisdom of restricting membership of professional bodies, either senior or junior, to persons holding specific technical qualifications. From two widely separated areas in recent weeks come references to the subject. At a special business meeting of the London and Southern Junior Gas Association the principal item on the agenda was a proposal to delete the word 'technical' from the conditions of eligibility for associate membership. On this seemingly simple proposal the meeting found itself sharply divided—much more so, in fact, than in the course of normal discussion on technical topics—and after considerable debate it was agreed to defer a decision for a further 12 months. The principal argument in favour of the proposal lies in the fact that there is in the industry today a growing number of responsible officials in many departments who while 'technicians' in their own particular spheres, whether it be accountancy, market research, planning, or publicity, nevertheless do not, and have no need to, hold such technical qualifications as many gas associations set on eligibility for membership. It is contended that the breadth of vision and wealth of experience that such men could bring to the deliberations of our technical bodies would not only enhance the proceedings but provide these newcomers with a proper platform for the contributions they can undoubtedly offer for the good of the industry which they also serve.

Mr. R. A. Currie, in his Presidential Address to the Scottish Junior Gas Association (Western District), said some gas boards are already urging those associations who at present incorporate educational qualifications for membership to dispense with them and open their ranks to all interested in the industry. He contends that his Association should remain open to all classes of personnel and not confine membership to qualified technicians. Failing any such concessions we foresee the possible formation of independent organisations to cater specifically for such personnel as are excluded from membership of existing bodies on what can be aptly described as 'a technical point.' This would not only deny to the existing bodies the valuable contributions which these officials could bring, but would add—in our view unnecessarily—to the already large number of organisations within our industry.

THE PROCESSING OF COAL

For his presidential address to the North Western Fuel Luncheon Club, Mr. Ernest West took for his subject 'The Processing of Coal,' in which he has been keenly interested most of his life. He reminded us of the urgent necessity for conserving our main material asset, coal, the necessity to use it with the utmost efficiency in its domestic and industrial applications—a necessity fully emphasised in the recent Ridley Report.

Among the many problems of construction, involving civil, mechanical, electrical and chemical engineering, was that of the large thermal expansion of the refractory materials in which the retort and its setting must be constructed. A high grade silica brick, Mr. West explained, would expand as much as 1.25% at the carbonising temperature of up to 1,350°C.—a formidable problem in a retort standing 25 ft. in height. Expansion spaces must be arranged in the setting, the whole must be strongly braced with steelwork, and great care must be taken in raising the temperature, particularly through the range around 400°C. where the bulk of the expansion takes place.

The President's Company in Manchester (West's Gas Improvement Co., Ltd.) is fortunate in the possession of a full scale research plant, particularly valuable in development research, testing out in a practical manner ideas that may be forthcoming as the result of more fundamental research. The plant is, in fact, a complete small gasworks in which any class of coal, and new types of apparatus, can be tested and the results recorded. It has been of considerable value to the gas industry, many types of coal both from home sources and abroad, having been processed therein.

Mr. Ernest West emphasised the vital importance of continuous research and of full co-operation between all the fuel industries. While he fully recognised that the electrical industry was not using the same classes of coal as the gas industry, its thermal efficiency was admittedly low, and surely the time was ripe for the two industries to work closer together to obtain greater overall efficiency. The advent of the gas turbine might do something to commend this view to both industries, to secure the greatest coal economy in the national interest.

Metallurgy is neither a pure science nor a purely intellectual pursuit. It is a technical and technological activity which is intended to provide things which are useful to mankind. The vocational instruction given to metallurgists must, therefore, be technological or simply technical.

A study of the education and training of metallurgists has been carried out by a joint committee formed from the major British metallurgical institutes and certain new recommendations have just been put forward. Nothing has emerged from this recent survey to shake the committee's opinion that the universities are the chief source of high-grade metallurgical technologists, and it doubts whether any other source of equal value can be developed.

Personal

Mr. L. H. Hardern, Public Relations Officer, North Thames Gas Board, has been appointed a member of the Council of British Direct Mail Advertising Association for the coming year.

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Mr. R. H. Jones (South Western Agencies) 21 Castle Street, Cardiff, has been appointed representative of Walter Slingsby & Co., Ltd., for South Wales and South West England for the sale of malleable iron pipe fittings and unions.

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Mr. J. W. Williams, who has been in the gas industry for the past 15 years, has joined Smith Meters, Ltd., sales staff for the Wales territory. The company announces that the sales agency for Wales until recently held by Mr. Watt, of Bradley and Watt, has been mutually terminated.

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Mr. C. Marley has been appointed by the Board of Main Water Heaters, Ltd., to be Joint Managing Director with **Mr. P. D. M. Aird,** and **Mr. C. A. Macleod** has been elected to the Board and appointed Sales Drector. These appointments are in pursuance of a policy of co-ordination within the group, with effect from September 30.

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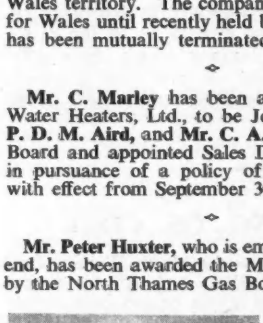
Mr. Peter Huxter, who is employed as a fitter's mate at Southend, has been awarded the Milne-Watson Scholarship for 1952 by the North Thames Gas Board. The scholarship, founded in 1946 in memory of the late Sir David Milne-Watson, is awarded annually to the most promising employee of the year, and is tenable for a full-time degree or technical course at either a university or technical college. Mr. Huxter, who is 27, is planning to take a civil engineering course and on its completion hopes to transfer to the Board's distribution department where his father has been employed for the past 27 years. He joined the former Gas Light and Coke Company in 1940 as an assistant in the stores at Southend works. Called up for the R.A.F. in 1944, he became a wireless mechanic, serving in France, Belgium, Holland, and Germany before returning to Southend in 1949 as an assistant gas fitter. He has attended evening classes at Westminster and Southend for the Gas Technology (Supply) course in which he has a series of first class passes in several subjects.



Obituary

Mr. Joseph Jude, formerly Commercial Manager of the Chester-le-Street branch of the Newcastle and Gateshead Gas Company, has died at the age of 74. Mr. Jude, who retired in 1945, had been in the gas industry at Chester-le-Street for more than 50 years. He entered the industry as a junior clerk with the Chester-le-Street Gas Company, which in 1924 was taken over by the Newcastle and Gateshead Gas Company. Soon after the amalgamation, Mr. Jude was appointed manager, a position in which he served until his retirement.

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Mr. John Pattisson, Chairman of the Municipal Agency, Ltd., died on October 13, aged 66. He was associated with local government administration for many years. At the end of the 1914-18 war he joined his colleague, the late Mr. Arthur F. May, when they founded the Municipal Agency, which represents a number of technical journals of local authorities and their chief officers. Mr. Pattisson was the founder of what is now known as the Public Works and Municipal Services Exhibition and at the time of his death he was organising this year's show, to be held on November 3-8. After the war, he was joined by the wife of his late partner, Mrs. Florence May, and with the passing of Mr. Pattisson, the Municipal Agency and the exhibition come under the direction of Mrs. May.

Diary

Oct. 23.—Midland Juniors and Yorkshire Juniors: Joint visit to Standard Motor Co., Ltd.

Oct. 25.—London Juniors: Afternoon visit to Willoughby Lane, Tottenham, depôt of William Press & Son, Ltd. 2.30 p.m.

Oct. 28.—Wales Juniors (North Wales Section): Visit to Stanlow refinery of Shell Mex, Ltd.

Oct. 28.—London and Counties Coke Sales Circle: Visit to Bath undertaking of the South Western Gas Board; 'Coke and the Coal Merchant,' R. F. Knowlden, Coke Officer, Bristol Division. Depart Paddington 9.5 a.m.

Oct. 28.—Midland Section, I.G.E., and Midland Branch, Institute of Sewage Purification: 'Treatment of Gasworks Liquor in Admixture with Sewage in Percolating Filters,' W. H. Blackburn, PH.D. (ex Gas Research Board), T. G. Tomlinson, M.SC., M.INST.S.P. (Water Pollution Research Laboratory), and T. H. Summers. At Birmingham Chamber of Commerce, 2.30 p.m.

Oct. 29.—Institution of Gas Engineers and Coke Oven Managers' Association: Joint Meeting, 'Selection of Gas Manufacturing Plant in Relation to Supplies of Coke Oven Gas,' F. G. Pyper, East Midlands Gas Board, at Institution of Civil Engineers, 2.30 p.m.

Oct. 30.—North Thames G.C.C.: Westminster City Hall, W.C.2. 2.30 p.m.

Oct. 30-Nov. 1.—North Eastern Gas Board: Conference of Senior Officials, Harrogate.

Nov. 3-8.—Public Works and Municipal Services Congress and Exhibition, Olympia. Institution of Gas Engineers session, Nov. 5: 'The Gas Industry's Contribution to the Fuel Services of the New Town,' W. G. Phillips, M.A., A.M.I.C.E.; 'The Cremation Movement in Great Britain with special reference to Cremator Design,' W. R. Pearson, A. Higgs, and R. H. Anderson. Gas Council exhibit, Stand No. 161.

Nov. 4.—East Midlands G.C.C.: Town Hall, Sheffield, 11.30 a.m.

Nov. 4.—South Eastern G.C.C.: Caxton Hall, Westminster, 10.30 a.m.

Nov. 4 and 5.—'International Kitchen,' Royal Festival Hall, South Bank Exhibition of international cookery sponsored by the Gas Council. Exhibition open to public on Nov. 5. Admission free 10.30 a.m. to 5.30 p.m.

Nov. 7.—Scottish Juniors (Western): 'Contracting for the Gas Industry,' R. Dutnall, Royal Technical College, Glasgow.

Nov. 7.—London Juniors: 'Gas and Coke Manufacture at Villeneuve-la-Garrene,' P. C. Savage, B.SC., Assistant Engineer, Beckton Works, North Thames Gas Board, 178, Edgware Road, W.2. 6.30 p.m.

Nov. 8.—London Juniors: Visit to Southall station of the North Thames Gas Board. 2.15 p.m.

Nov. 8.—Scottish Juniors (Eastern): Afternoon visit to Dixons Ironworks, Glasgow.

Nov. 11.—Midland Juniors: 'Industrial Pyrometry' by H. J. Smith (Industrial Pyrometers, Ltd., Birmingham). Staff Mess Room, Birmingham.

Nov. 12.—Manchester Juniors: Visit to collieries in Astley Green District by invitation of N.C.B.

Nov. 13.—Eastern Section, I.G.E.: 'Some Aspects of the I.G.U. Conference in Brussels, 1952,' W. A. Evetts (Watford), D. B. Parkinson (London), and D. W. Ault (Lincoln). 17, Grosvenor Crescent, S.W.1.

Nov. 13.—Institution of Heating and Ventilating Engineers (Liverpool and District Branch): 'Automatic Controls,' F. M. H. Taylor, PH.D. Radiant House, Bold Street, Liverpool. 6.30 p.m.

Nov. 14.—Manchester and District Section, I.G.E., Ordinary General Meeting, Huddersfield.

Nov. 17.—Eastern G.C.C.: Connaught Rooms, Kingsway, W.C.2. 2 p.m.

Nov. 18.—Scottish Juniors (Western): Evening Visit: Burroughs Adding Machine Co., Dumbarton.

Nov. 18.—London and Southern Section, I.G.E.: 'Steam and Power in the Gas Industry.' L. J. Clark (North Thames Gas Board). Re-presentation of his paper to the 5th International Gas Union Conference in Brussels. 17, Grosvenor Crescent, S.W.1. 2.40 p.m.

News in Brief

Business Has Broken All Records, we learn, on the Scottish Gas Board's stand at the Glasgow Modern Homes Exhibition.

Lynmouth Relief.—The company and the employees of Tecalemit, Ltd., have contributed the sum of £150 to the Lynmouth Relief Fund.

St. Paul's Heating.—The heating system in St. Paul's Cathedral is being modernised at a cost of about £1,000. The five coke-burning boilers are being replaced by four self-feeding, anthracite-burning furnaces. Additional radiators are to be installed. Part of the new system will be in use by the end of this month.

A Road Sign employed by the Wales Gas Board on main laying jobs on main roads and footpaths caused favourable comment (and a photograph) in the local Press when it was used recently in Cardiff. It shows Mr. Therm pointing to a notice which reads: 'Sorry for this inconvenience—we're improving our service. Wales Gas Board.'

The Ban on Shop Lighting and advertising signs between 7 a.m. and 7 p.m. has been lifted. This has been made possible chiefly by the improved fuel and power situation and particularly by the increase in coal stocks and in generating capacity, which is now regarded as an adequate level of reserve against normal winter demand at the power stations.

Warrington Rural Council was told at its last meeting that within a few days 18 street lamps had been deliberately smashed. 'This is sheer hooliganism,' commented Councillor H. B. Wright, who added that the police were doing their best to track down the culprits. They were not receiving much help from the residents and ratepapers, he added. Councillor J. J. Palin, the Chairman, told the Council a further appeal had been made to school children in the area to watch out for vandalism, but there had been little improvement in the situation.

The Storage of Coal is the title of an article by Dr. D. A. Hall, Divisional Chief Scientist, Durham division, National Coal Board, which appeared in a recent issue of the *Purchasing Journal*, the official organ of the Purchasing Officers' Association. In view of the great interest aroused by the article among members the Association has published reprints, copies of which are available from the Association offices at Wardrobe Court, 146a, Queen Victoria Street, E.C.4. The author concludes that if the proper precautions are taken any coal used in the United Kingdom can be stored safely. It should be clearly realised that spontaneous combustion, when it occurs, is a chronic and insidious trouble. In order to avoid it a proper plan must be followed in laying down coal stocks. Conscious effort, spent in advance, will be found invaluable if the whole of a coal stock is to remain available for consumption as originally intended. The application of principles, quite simple in themselves, such as have been explained briefly in the paper will lead to this end.

Two Riveters had a narrow escape in Glasgow on September 23 when the gasholder from which they had just emerged burst into flames. The gasholder, one of the biggest in Britain, was under repair at Provan gasworks, and the fire is believed to have been caused by a spark setting fire to oil waste at the bottom of the holder. Firemen fought for two hours to prevent the 25-ft. high flames from spreading along the connecting channel to another gasholder. Special foam equipment was used to bring the outbreak under control. Part of the framework of the holder was damaged.

The West Midlands Gas Board, which carries the largest industrial gas load of any of the area boards, has recently made some changes in its industrial organisation. Mr. J. F. Waight, B.SC., is now Engineer to the Industrial Department, and Mr. W. N. Smirles, B.SC., with the drawing office and technical staff, become part of the enlarged headquarters section which will deal with all experimental and technical work applying to both laboratory experiments and works at consumers' premises. The Board's Industrial Gas Officer, Mr. H. R. Hems, is in charge and it is hoped that the new arrangements will allow for the necessary expansion of the work involved and bring about further improvements in the service offered to industrialists.

Dense Tar Surfacing.—The British Road Tar Association has published a useful booklet, 'Code of Practice for Laying Dense Tar Surfacing.' This covers transportation, laying, consolidation, and joints.

A New Film Strip is announced by the Institution of Gas Engineers. Entitled 'Horizontal Retorts' it comprises 47 frames of photographs and diagrams, together with an illustrated index. It is available from the Secretary of the Institution at 17, Grosvenor Crescent, S.W.1, price 21s.

Freedom of Choice.—Tenants on Sunderland Corporation housing estates are to have freedom of choice between gas and electricity for cooking. Sunderland Corporation Housing Committee has decided to permit this freedom of choice subject to the Northern Gas Board agreeing to provide gas cookers on hire to the tenants who desire them as they do for tenants of privately-owned houses. The Corporation will continue to supply gas boilers as heretofore. Recently a similar concession was obtained at Blyth where a deputation representing the Northern Gas Consultative Council met the Town Council. Freedom of choice is also afforded at Wigton, Cumberland. Until now it has been the policy at Blyth and Sunderland to allocate gas and electricity for cooking on Corporation estates on a 50-50 basis.

MIDLANDS IDEAL HOME EXHIBITION

OUR photograph is a view of the stand designed by the publicity office of the West Midlands Gas Board for the Midlands Ideal Home Exhibition held at Bingley Hall, Birmingham, from September 24 to October 18.

The stand was greatly admired by both the general public and the exhibition organisers. Its dignity was enhanced by the use of Regency Stripe and Polka Dot wallpapers, coupled with gold lettering and gold arches, forming an attractive setting for a comprehensive display of domestic gas appliances and equipment.

The centre feature showed an inset for live water heaters, while the corresponding structure on the other side of the stand contained a tiled fireplace with a live gas ignited coke fire. Other live appliances on the stand were panel fires, refrigerators, and four cookers.

Development in the North West

AT the invitation of the North Western Gas Board we were able last week to gain an intimate and comprehensive picture of the developments in integration in the vast area of the Board, and we were impressed with the progress which has already been made since vesting day—this in spite of great difficulties due to the steel supply position. The plan covers 15 years and at present prices is estimated to cost £40 mill.

A basic factor is the establishment of a grid through the industrial belt of the area. Already the grid connects 45 towns for gas distribution from the main production works. Many of the larger gasworks in the area are being extended and small uneconomic units are being closed down. The scheme allows, through interlinkage, the full and efficient use of plant throughout the year at base load stations with great advantage in the balancing of industrial and domestic demand concurrently with improved service to the consumer.

Planning Division

First step in the tour of inspection was a visit to the Board's technical and planning division at present housed at the Bradford Road works. Here the Chairman, Mr. D. P. Welman, outlined the Board's aims and accomplishments, the technical aspect of the programme being dealt with clearly and succinctly by Mr. W. Hodkinson, Chief Technical and Planning Officer.

This division comprises three main departments: Production, distributing and construction, and maintenance. There are auxiliary services available to the three main departments. The function of the division is the co-ordination of group activities, and also to act in an advisory capacity in connection with the putting into effect of Board policy.

The functions of the production department are:

(*a*) To obtain and maintain maximum economic efficiency of production in each of the production stations in the Board's area through the agency of group production engineers. As an example, the following improvement in thermal efficiency of production stations has been obtained since vesting date:

1949-50	71.20%	average
1950-51	71.68%	„
1951-52	72.65%	„
At August, 1952	74.55%	(one month).

Had the Board been operating at the same efficiency in 1951-52 as existed in 1949 it would have required some 70,000 tons more coal than was actually used, and it would have made some 36,000 tons less coke for sale. These figures continue to improve since March 31, 1952.

(*b*) To ensure adequate production potential throughout the area by forward planning of new manufacturing plant and to ensure economic integration and operation of existing production.

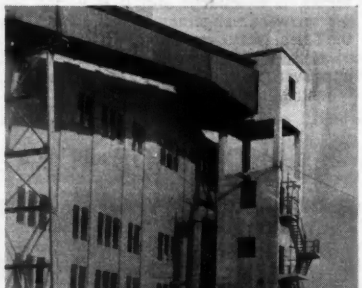
(*c*) To keep abreast of all new technical developments and initiate research and development work as required.

The department is staffed by gas engineers, chemical engineers and chemists who act as consultants to group officers on specialised aspects of production.

The work of the distribution department since vesting date has been primarily concerned with the design and laying of such mains system as has been necessary to effect an integration of production stations within groups and between groups. Another important function is to vet all schemes that are presented to the Board by its groups for the improvement of supplies to existing consumers; such examination of schemes is directed not only to ensuring that they are efficient but economically sound.

The department has also co-ordinated to maximum advantage for inter-group movement the labour, materials, and tools and tackle in the area.

The constructional and maintenance department is sub-divided into two. A direct labour organisation on the one hand and a group of specialists on the other, assisted by a number of draughtsmen available for developing schemes for the construction of new works and the reconstruction of existing ones. The direct labour organisation employs some



The New Woodall-Duckham Retort House at Partington.

350 skilled and unskilled workmen who carry out construction and maintenance work to the value of some £500,000 per annum. The Department is also of great value in that it directly controls the priorities of their work and can ensure their availability to the most urgent jobs.

The Partington Works

From Bradford Road we went to the Partington works of the Board, where we were met by Mr. J. Wilson, Manchester Group General Manager, and following an informal luncheon we made detailed inspection of this key producing station which is to be expanded to a daily capacity of 55 mill. cu.ft. Present capacity is 19 mill. cu.ft. of gas daily, and this will increase to 24 mill. cu.ft. in mid-November when a new Woodall-Duckham retort house is in operation.

There are several interesting features about this works, of which the first units went into production in 1929. Remote mechanical breeze burning producers were installed for the heating of the horizontal retorts and semi-direct ammonia recovery, and the works was entirely self-contained as far as electricity production was concerned. Two generators driven by compound steam engines and one by a Diesel engine were installed to produce direct current at 440 volts, to meet all requirements. An entirely automatic water gas plant of 6 mill. cu.ft. per day was constructed and put to work in 1949, while the second of the vertical retort houses was erected, as originally planned, and is now ready for use. The total output of the works was further considerably increased by purchasing tail oil gas from the adjacent oil cracking plant of Petrochemicals, Ltd., this gas varying between 900 and 1,400 B.Th.U. per cu.ft., being diluted to standard quality with producer gas.

With the new vertical retort house in full production, it is estimated that the works will have an output of 24 mill. cu.ft. per day, at 450 B.Th.U. per cu.ft., with an annual coal consumption of 275,000 tons.

New Compressing Plant

The Partington works is connected by a 36-in. steel main, approximately 10 miles long, direct to Gaythorn distribution station, and thence to the Bradford Road and Rochdale Road works. There is a connection to the Stretford undertaking, and at King's Road in Stretford, three compressors are installed, each of 250,000 cu.ft. per hour capacity, two being electrically driven and one gas engine driven, as completed standby in case of electrical failure. These compressors feed the Manchester high pressure ring main via Wythenshawe to the Bradford Road compressing plant. The steadily increasing production capacity of Partington works has recently necessitated the installation of a much larger compressing plant, which, in addition to supplying gas to Manchester and Bolton, also feeds Cadishead, Altrincham, and Lymm mains.

Of special interest is the coal blending plant. Apart from its function in blending coals with widely different coking characteristics, such as Yorkshire and Lancashire, to give a reasonably constant quality passing through the retorts, fine coke breeze can be added to the coal mixture to improve the coke when using sponge-forming coals. Moreover, the four bunkers, each containing 250 tons of coal, add to the available storage and make it possible to cut out week-end work so far as the tipping of coal is concerned.

To give a description in rather more detail of the varied plant installed, the horizontal carbonising house commenced work in 1929 with a nominal capacity of 4 mill. cu.ft. per day and an actual capacity of 5 mill. cu.ft. per day when including producer gas dilution. As mentioned, the retorts are heated by producer gas obtained from breeze-burning mech-

anical producers situated in an adjoining house. The coal bunker capacity is approximately 600 tons. In 1948 the retorts were modernised and equipped with the Congdon system of gas extraction, and the Le Fleuve system for hot coke quenching and conveying to the screening plant.

The mechanical producer house was originally equipped with Trefois producers of Belgian make, but most of these have now been replaced by more modern machines built by the Power Gas Corporation, Ltd. There are eight machines, five having a gasification capacity of one ton per hour each, and three of the older type of 10 cwt. per hour. The total production capacity of this house is 780,000 cu.ft. of gas per hour, the larger portion of which is used for heating the settings in the horizontal retort house, while the remainder is used for the dilution of oil refinery 'tail' gas, and for generally bringing the quality of the works daily production to standard. All the producers gasify coke below ¼-in. in size, from which dust has been previously extracted.

Continuous Vertical Plant

The Glover-West carbonising plant commenced gasmaking in 1929, with a nominal capacity of 4 mill. cu.ft. per day, and an actual capacity of 5 mill. cu.ft. This house is shortly to be reconstructed to bring it into line with the new Woodall-Duckham house. The latter, now going into service, also has a nominal capacity of 4 mill. cu.ft. per day. Heating is by three Humphreys and Glasgow producers, each capable of heating one bench, complete with waste heat boilers and all ancillary plant. The settings themselves are equipped with waste heat recovery boilers and the whole retort house is constructed on spacious lines, which will permit of extensive alterations as dictated by future development in the area, without interference with the fabric of the building. Special attention has been paid to providing amenities for retort house employees, and apart from adequate rest rooms, etc., there is in this house a comprehensive system of dust collection to ensure good working conditions.

The coke from the two vertical installations travels by conveyor belt to a junction tower where they join and pass to the main coke screening and storage plant which is at present in course of construction. This will embody all the latest developments, and will normally screen 40 tons per hour of coke from the retort houses and, in addition, will deal with 50 tons per hour of coke lifted from stock, this being essential since the geographical position of Partington works is ideal for shipping this material.

The coke storage plant also under construction is of novel design consisting of two concrete towers 60 ft. high, one being fitted with anti-breakage chutes. These towers are bridged at the top to support a shuttle belt fed by a conveyor by-passing the screening plant.

The condensing plant consists of two sets of three W. C. Holmes horizontal tube condensers, each set having a capacity of 5 mill. cu.ft. per day, and two sets of two R. & J. Dempster vertical multipass type condensers each set also dealing with the same volume.

The water cooling tower is by Film Cooling Towers, Ltd., with induced draught cooling system, providing recirculation water for all condensing plant.

Hitherto on the vacuum side, the tar extraction plant is now being altered to complete electro-static precipitation on the pressure side. The plant comprises three W. C. Holmes 'Elex' units and one Simon-Carves unit (repositioned), these being arranged in two groups of two units, one group to deal with 10 mill. cu.ft. per day, and the other 5 mill. cu.ft.

Provision is made for dephenolating 35,000 gal. of effluent liquor per day, before discharging to the Ship Canal.

Benzole plant is of the oil washing type by Simon-Carves, Ltd., and is capable of extracting 550 gal. of crude benzole per day.

Coal Blending Bunkers at Partington.

Up to the present, the booster plant has consisted of two Bryan Donkin electro-turbo boosters of 500,000 cu.ft. of gas per hour each, and one steam booster for reinforcement purposes. These have boosted gas to Manchester and are now being replaced by a set of reciprocating compressors consisting of four 500,000 cu.ft. per hour capacity boosters and five 250,000 cu.ft. per hour. With the exception of two of these machines which are being modified to compress to 20 lb. per sq. in., the rest of the plant is rated for an output of 10 lb. per sq. in. The plant is housed in a concrete building with separate motor room. Four of the motors operate on 6,600 volt A.C. electricity supply. The arrangement of connections is such as to provide three separate streams to supply Manchester, Lymm, and later Bolton, this being the existing 36-in. main to Manchester, while the other two mains will supply the Cadishead and Altrincham districts. The capacity of this compressing plant was planned to deal also with the coke ovens arranged to be built on an adjacent site.

The proposed coke oven plant is to be entirely segregated from the gasworks proper, the gas passing to the compression plant, as already mentioned. The proposal is to construct a battery of 30 W-D Becker ovens which will produce from approximately 1,200 tons of coal per day 15 mill. cu.ft. of purified debenzolised gas diluted with producer gas down to 475 B.T.U. per cu.ft. The plant will be arranged with separate access by rail. The layout permits duplication up to 30 mill. cu.ft. per day, bringing the capacity at Partington up to approximately 55 mill. cu.ft. per day.

Adjacent to the works is the housing estate, consisting of 31 houses for staff and workers. Tennis courts, sports field, and bowling green are provided. A further extension of the housing estate is already planned, which will bring the number to approximately 100.

The Radcliffe Works

Then came a 'cross country' run to Radcliffe throughout what is in fact a solid built-up area formerly divided, as far as gas supply was concerned, into separate units each with its own ideas on gas manufacture and distribution and, prior to 1949, without possibility of interlinkage of gas supply. The Radcliffe is a typical small works supplying round about 32,000 consumers in an area of 20 sq. miles. The capacity is roughly 5 mill. cu.ft. a day. A production station since 1876, it is managed by the Bolton group of the N.W.G.B., and we were received by the Group General Manager, Mr. T. Haworth.

It was in 1938 that the United Kingdom Gas Corporation purchased the undertaking, and the five-year period 1939-44 saw the complete rebuilding of carbonising and ancillary plants raising the maximum daily output of the plant to over 3 mill. cu.ft. The carbonising plant (Drakes verticals) is capable of an output approaching 5 mill. cu.ft. per day, but this is in excess of the purification capacity. Rebuilding and extensions are at present in progress. Reconstruction already completed during the last 18 months includes the installation of further condenser unit and pumping equipment and an electrical sub-station and generator house. Foundations for a new purification plant are complete and erection of the steelwork is in progress. It is expected that this plant will be in operation before the winter of 1953.

A new concentrated ammonia plant is to be erected having a capacity of 450 gal. per hour of crude liquor and making a 20% concentrated product. A compressor capable of passing 200,000 cu.ft. per hour at a pressure of 20 lb. per sq. in., driven by a 300 H.P. electric motor, has been installed to enable gas to be sent from Radcliffe into the interlinkage mains from Salford.

With the background packed into nine hours, return was made to Manchester, where, after dinner, the Chairman of the Board, Mr. Welman, asked for 'any questions.' From the journalists present he was in fact asked many questions and it was evident enough that new avenues of thought had been opened up as a result of the intensive and strenuous day's tour of inspection—that a better insight had been gained into the working of the North Western Gas Board and, indeed, of the gas industry in general under nationalisation.

BIRKSHALL'S NEW PLANT

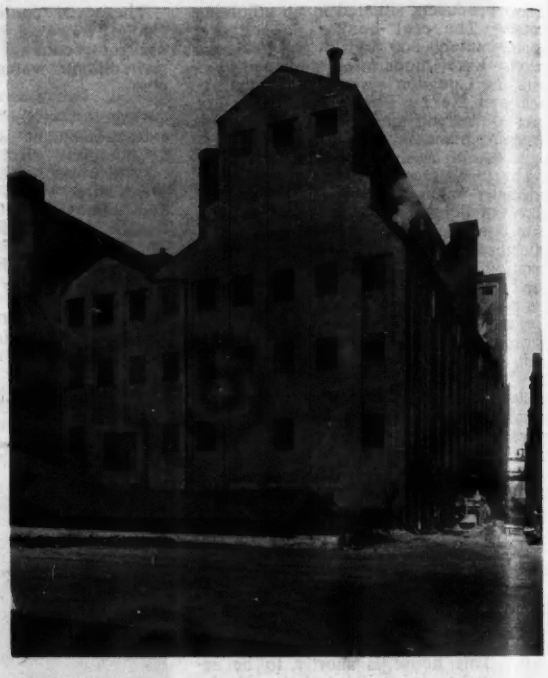
President of the Institution Opens £1,500,000 Extensions

IN opening the new £1,500,000 extension to the Birkshall (Bradford) works of the North Eastern Gas Board, Mr. G. E. Currier, O.B.E., Deputy Chairman of the Board, President of the Institution of Gas Engineers, and former Engineer and Manager of the Bradford Corporation Gas Department, paid tribute to the vision and public spirit shown by the Gas Committee when they decided to proceed in 1947 with their plans for large extensions to the manufacturing and distribution system of their gas undertaking.

'It would have been understandable,' said Mr. Currier, 'if the Corporation had decided at that time to suspend further capital investment in their undertaking until the future of the industry had been settled. Instead, with great courage and public spirit, they proceeded with the extensions, placing all the orders for the plant and machinery before vesting day. The Bradford undertaking has grown at a rate exceeding even that of the industry as a whole. The gas available for sale has grown from 2,018 mill. cu.ft. in 1937-38 to 3,919 mill. in 1951-52 —an increase of 94%.'

Included in this photograph are A. McDonald, Member, and Norman Hudson, Chief Commercial Officer, North Eastern Gas Board; and B. C. Morton, Managing Director of Robt. Dempster & Sons, Ltd.

'I shall always be proud of my connection with the Bradford undertaking,' continued Mr. Currier, 'and look back with pleasure and gratitude to my association with the Bradford Corporation, and in particular with the Gas Committee. I have reason to appreciate the help and support I received from Alderman Cowie and Alderman Carris, who, in significant times in its history, occupied the chair of that Committee. I cannot let this occasion pass without paying a most generous tribute to Mr. Harry Johnston, formerly my Deputy at the Bradford undertaking, and now Chief Engineer to the Board. He played a great part in assisting me in preparing the reconstruction scheme for approval. It has been my privilege to be associated with him for a period of 17 years.



The Retort House

Tribute to Staff

Mr. Currier expressed appreciation of the splendid work done by the new General Manager, Mr. C. A. Newham, and his Deputy, Mr. F. H. King, in the execution of the extension scheme. He also paid tribute to the other members of the staff, particularly Mr. S. A. West, the Works Manager, Mr. G. Griffiths, Distribution Engineer, and the former Chief Draughtsman, Mr. John Hargreaves. 'Last but by no means least,' said Mr. Currier, 'I acknowledge the ready help and co-operation which has always been given by the foremen and workmen concerned with the extensions. The contractors engaged to carry out the construction of the new plant have done a magnificent job in keeping with their traditions and reputations.'

The new plant at Birkshall brings the capacity of the Bradford undertaking up to just over 20 mill. cu.ft. per day, which makes it the largest producing unit in the area. The scheme includes additional carbonising plant, together with complete ancillary plant from condensers to station meters. The extensions to the distribution system consist of a high pressure ring main laid around the outskirts of the city with governors and feeders en route, together with new boosting machinery. The total length of main involved in the scheme is approximately 10¼ miles and the sizes 6 in. to 10 in. diameter. This main will augment supplies to several large new housing schemes which are in course of development and erection.

After the inauguration ceremony, over which Dr. R. S. Edwards, Chairman of the North Eastern Gas Board presided, the Lord Mayor of Bradford, Alderman John Shee, O.B.E., J.P., unveiled a commemorative plaque to mark the occasion.

Left to Right: *F. H. King, Deputy Group General Manager, C. A. Newham, Bradford Group General Manager, and J. Hargreaves, Chief Draughtsman, North Eastern Gas Board.*

Members of the City Council and officials of the Corporation later made a tour of the works, and were afterwards entertained at lunch at the Town Hall by the Lord Mayor.

In proposing the toast, 'The North Eastern Gas Board,' the LORD MAYOR, said that when the North Eastern Gas Board set to work in 1949 to consolidate the system of gas supply in their area, they were very fortunate to be able to take over some of the Corporation's best officials—Mr. Currier, Mr. Johnston, and others. The North Eastern Gas Board had a very large area to look after, which embraced the whole of the East Riding and part of the North and West Ridings, and the consumers numbered 800,000.

Replying to the toast, Mr. G. E. CURRIER, O.B.E., said he was confident that results would fully justify the £1,500,000 expended.

The toast, 'The Lord Mayor and City of Bradford,' was proposed by Dr. R. S. Edwards, Chairman of the Board, who paid tribute to the enterprise which prompted the Corporation to go ahead with the extensions to the Birkshall works in the post-war years when the country was in a state of economic uncertainty.

Our photograph at the Birkshall works includes H. Johnston, Chief Engineer, N.E.G.B.; I. Laycock and A. Kinsey, also of the North Eastern Gas Board; and L. G. Minns, of the Woodall-Duckham Company.

After thanking the Lord Mayor for unveiling the plaque, and for his hospitality, Dr. Edwards presented him with a fountain pen which he hoped he would accept as a small token of appreciation.

Alderman H. W. SEMPER, J.P., responded on behalf of the City of Bradford.

The New Plant

In 1947, in view of the regularly increasing demands for gas, a scheme for considerably extending the manufacturing plant at Birkshall works was prepared and submitted to the Gas Committee by their Engineer and Manager, Mr. G. E. Currier, O.B.E. The City Council approved the scheme, and orders were placed as soon as Ministry approval was received.

The daily capacity of the plant prior to the extensions being carried out was 7,480,000 cu.ft. of coal gas and 4 mill. cu.ft. of carburetted water gas. The capacity of the new plant brings this total up to just over 20 mill. cu.ft. per day, which makes Birkshall the largest producing unit in the area.

The scheme included additional carbonising plant, together with complete ancillary plant from condensers to station meters forming a separate or third stream of gas, but interconnected with the existing streams at the foul main and washers, thereby giving great flexibility.

The carbonising plant, built by the Woodall-Duckham Co., includes two benches each of 24 continuous vertical retorts in a new building adjoining the existing retort house. The capacity of the 48 retorts is 6,200,000 cu.ft. of gas per day, carbonising 348 tons of coal.

The retorts are 82 in. long by 10 in. wide at the top by 26 ft. high and are so arranged that any individual retort can be controlled independently of the others. Each bench is divided into six sections separated by transverse air-cooled division walls. The retorts embody the lambent-heating system.

Coal is fed to the retort house through a 30-ton rotary wagon tippler which is positioned in the works own sidings and discharges into a 50-ton reinforced concrete hopper. The coal then passes via a drag-bar feeder to a bucket elevator which discharges, within the retort house, into a coal breaker which reduces the coal to a maximum size of 2½ in. cube. A gravity bucket conveyor, encircling the end bay of the retort house, takes the coal from the breaker and discharges on to a fixed 30-in. band conveyor arranged above and along the overhead storage hoppers, the capacity of which is equivalent to 48 hours' requirements of the retorts. This conveyor feeds a 30-in. shuttle band conveyor for distribution throughout the hoppers. The retorts are then fed through auxiliary hoppers in the usual manner.

The capacity of the coal handling plant is 80 tons per hour. A 30-in. band conveyor is also provided which can take coal from the top strand of one of the two gravity bucket conveyors which encircle the existing retort house.

The offtake and uptake pipes are fitted with liquor sprays and the foul mains are provided with Askania regulators.

Two batteries of four producers each are so arranged that any one of them can be shut down without interfering with the working of the others. They are of such a size that when 22 retorts in one bench are working three producers are sufficient, leaving one spare.

Waste Heat Boiler

Each bench is provided with a waste heat boiler designed for a working pressure of 160 lb. per sq. in. and capable of adequately dealing with the waste gases for 24 retorts. Two Wier pumps deliver feedwater to the boilers, each pump being large enough to supply both boilers. In the inlet chamber of each boiler is installed a superheater capable of giving an additional superheat of 200°F.

On the same floor there are also two similar waste heat boilers which deal with the waste heat from the two nearest benches of the existing retort house. The waste gas mains are all interconnected, enabling each boiler to be interchangeable.

The whole of the coal and coke handling plant is amply provided with electrical sequence interlocks. The coke extractors are operated by electric motors with a vertical non-condensing steam engine as standby. The whole of the steam required for the retorts, producers, boiler fan turbines, feedwater pump, extractor engines, etc., is supplied by waste heat boilers and there is a surplus of over 3,000 lb. per hr. of superheated steam for other purposes.

Cyclone dust extractor equipment is installed to minimise the spread of dust during the discharge of the retorts.

The new retort house is a steel-framed, brick-panelled building with all the external steelwork covered in brick. To assist in the ventilation of the building Hill's patent glazing, with aluminium louvres, has been fitted to portions of the roof. All windows can be cleaned from inside the building.

Coke Handling

From the discharger the coke is fed through a hand-propelled travelling chute on to a 36-in. reversible band conveyor running in a trench in the floor of the retort house. This and subsequent conveyors are in duplicate.

Coke is transferred via this conveyor to the cutting, grading, and storage plant. When coke is required for producers or retorts this conveyor is reversed when it feeds the gravity bucket conveyor which encircles the end bay of the retort house at the coaling end.

The coke, conveying, grading, and storage plant was designed to handle coke from both the existing and new carbonising plants and is capable of dealing with a total of 140 tons per hour—*i.e.*, 70 tons per hour by each conveyor belt. These capacities are based on run of retort coke below 5 in. cube at 105 cu.ft. per ton. The installation was carried out by Robert Dempster

and Sons, Ltd., with F. C. Constructions Co., Ltd., as sub-contractors for the storage hoppers, gantry, and foundation work. The plant up to the storage hoppers is in duplicate and can all work together or separately. In addition, various combinations can be worked by the operation of flap valves and two-way chutes. Rubber and canvas belts are used throughout the installation for elevating and conveying the coke. Two 'Phœnix' coke-cutting machines with by-pass chutes are incorporated.

The conveyors feed 'Gyrex' vibrating type screens discharging into the reinforced concrete storage hoppers which have the following capacities:—

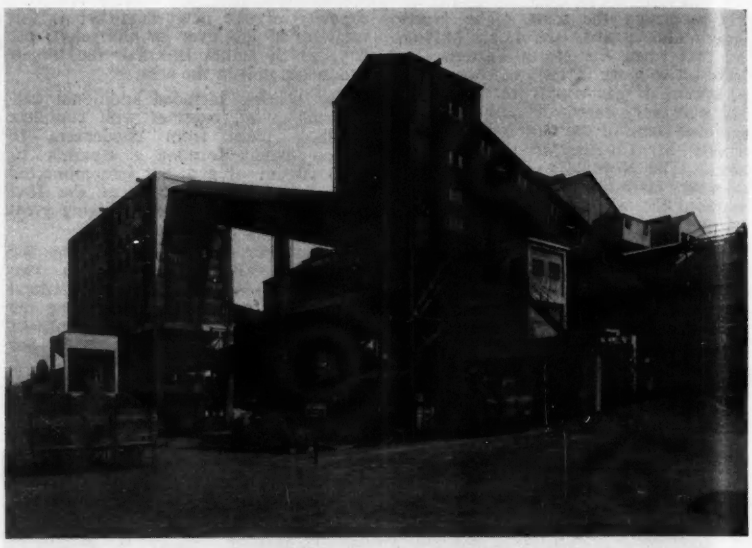
In.				Tons
0—⅜	...	...	...	70
⅜—¼	...	...	...	106
¼—1¼	...	...	...	330
over 1¼	...	...	...	136
	Total	...		642

A 'Saxon' dry-cleaning plant is provided for the removal of 'bats' and is capable of handling 3 tons per hour of screened coke of size ⅜—¼ in.

Under the storage hoppers are travelling debreezing screens and travelling automatic weighing and bagging machines. The storage hoppers hold screen coke of over 1¼ in. and between ¼ in. and 1¼ in. size.

Chutes are provided for feeding a crane skip, and automatic skip-filling gear ensures that only a predetermined amount is allowed to flow into the skip. An electrically-operated 60-ft. jib crane, in conjunction with the skip, is used for storing coke on the ground alongside the hoppers and uses a four-rope grab for reclaiming the coke. The capacity of this crane is approximately 30 tons per hour.

The crane, travelling on a reinforced concrete gantry 160 ft. long and 20 ft. high from ground level, transfers coke from the stock pile to a reinforced reclaiming hopper which is arranged to load directly into road vehicles through a debreezing screen. The arrangement of hoppers and debreezers is such that all coke of any size can leave the works free from breeze.



General View of the New Coke Handling Plant.

Coke can also be despatched by rail, wagons being loaded by means of a belt conveyor and loading hopper.

Ancillary Plant

The principal items of ancillary plant are as follows:—

Condensers.—Two Clapham, vertical tube multipass units, 3 mill. cu.ft. per day capacity each.

Exhausters.—Three Holmes-Connersville type. Two electrically driven, one steam. Each 3 mill. cu.ft. per day capacity.

Electro-detarrers.—Two Holmes Elex type, each 3 mill. cu.ft. per day capacity.

The Purifier Installation

Static Ammonia Washers.—Two Clapham-Barwick type, each 3 mill. cu.ft. per day capacity.

Purifiers.—Eight boxes 45 ft. square by 5 ft. deep. The boxes are elevated and complete oxide handling plant is provided. Installed by Clapham Bros., Ltd.

Benzole Washer.—6 mill. cu.ft. per day capacity. Installed by Newton Chambers & Co., Ltd.

Station Meters.—Two Connersville type, each 6 mill. cu.ft. per day capacity, installed in new house.

Gasholders.—Two two-lift, column-guided holders, capacities 1,400,000 cu.ft. and 960,000 cu.ft. replaced by two four-lift spirally-guided holders having capacities of 2,850,000 cu.ft. and 1,970,000 cu.ft. Supplied by Clayton, Son & Co., Ltd.

Auxiliary Services.—Additional steam, water and liquor mains and drains have been provided, including new water cooling tower by the Davenport Engineering Co., Ltd.

Electricity Supply.—The electrical power system has been greatly extended. Two additional, independent 6,300 volt supplies have been provided, together with the necessary switchgear, etc.

Machinery House.—The exhausters previously mentioned, together with the compressors, are housed in a new stone building the details and construction of which were carried out by the City Architect's Department of the Corporation.

Carburetted Water Gas Plant

This plant was installed by the Power Gas Corporation, Ltd., is fully automatic with self-clinkering grate, and has a capacity of 2,500,000 cu.ft. per day. The installation is housed in the same building as the three Humphrey & Glasgow sets. The plant is complete with coke elevating machinery, electro-detarrer, and tar-settling tanks.

The extensions to the distribution

system consists mainly of a high-pressure ring main laid around the outskirts of the city with governors and feeders *en route*, together with new boosting machinery. The total length of main involved in the scheme is approximately 10¼ miles and the sizes 6 in. to 10 in. dia. This main will augment supplies to several large new housing schemes which are in course of development and erection.

The boosting plant, housed in the new machinery house at Birkshall works, previously mentioned, consists of two electrically-driven vertical compressors, installed by Geo. Waller & Son, Ltd., powered by Lawrence Scott motors. One compressor has a capacity of 100,000 cu.ft. per hour and the other 50,000 cu.ft. per hour. For the present the machines are driven by motors of sufficient power to give a maximum pressure of 13 lb. per sq. in. from the larger machine and 7 lb. per sq.in. from the smaller. The machinery is, however, arranged so that when required the motors can be substituted by motors which will give a delivery pressure of 30 lb. per sq.in.

The connections are so arranged that gas can be boosted either round the city via the new ring main or via the existing independent high-pressure mains to the Valley Road and Mill Street works.

Also as part of the extensions to the distribution system three new station governors have been installed at the Valley Road works. The installations consist of three Peebles double-beat balanced valve type governors. The governors have 18-in. dia. diaphragms and are provided with automatic clock controllers, each governor supplying a separate district.

Principal Contractors

Contract	*Contractors*
Carbonising plant	Woodall - Duckham Co., Ltd.
Coke handling plant	Robt. Dempster & Sons, Ltd.
	F. C. Constructions Co., Ltd.
Condensers	Clapham Bros., Ltd.
Exhausters	W. C. Holmes & Co., Ltd.
Electro-detarrers	W. C. Holmes & Co., Ltd.
Static ammonia washers	Clapham Bros., Ltd.
Boosters	Geo. Waller & Sons, Ltd.
Purifier installation	Clapham Bros., Ltd.
Benzole washer	Newton Chambers & Co., Ltd.
Station meters	W. C. Holmes & Co., Ltd.
Gasholders	Clayton, Son & Co., Ltd.
Carburetted water gas plant	Power-Gas Corporation, Ltd.
Electricity supplies and installations	Yorkshire Electricity Board.
Water cooling tower	Davenport Engineering Co., Ltd.
Machinery and meter houses	Michael Booth & Sons, Ltd.

LONDON AND SOUTHERN JUNIORS

THE opening meeting of the new session of the London and Southern Junior Gas Association was held in the Demonstration Theatre of the North Thames Gas Board's Offices, Edgware Road, W.2, on October 10—the incoming president, Mr. C. D. SHANN (North Thames), presiding.

At a special business meeting consideration was given to proposals to amend the following rules by deletion of the words in parenthesis:

Rule 4(d). *Student Membership.*

'An applicant for registration as a Student Member must be under 30 years of age and not qualified for any other class of membership. He must (be employed by a Gas Board and) have enrolled for a course of study approved by the Council.'

Rule 4(c)(2). *Associate Membership.*

'. . . be over 30 years of age and have held for at least three years a (technical) position of such responsibility as makes him suitable in the opinion of the Council for Associate Membership. . . . '

The first of these was unanimously adopted while it was agreed, after some discussion, to defer a decision on the second for a further twelve months.

Opening the business of the ordinary meeting, the President announced that the British Junior Gas Association's Joint Council had again invited Junior Associations to submit short papers for presentation, if suitable, at the next meeting of the Institution of Gas Engineers.

Mr. Shann then invited Mr. J. D. C. Woodall to come forward and receive the gift which it was agreed should be presented to him to mark his presidency of the Association during its Jubilee year.

Mr. Woodall, in accepting the gift of a handsome clock, expressed his appreciation of this presentation, which would always be a reminder to him of the very happy year he had spent in the chair. He thanked the members for all the support they had given him during his year of office, without which it would not have been possible for him to get through. He wished the Association all prosperity during its next fifty years.

A presentation was also made to Miss A. C. Badcock for the work she had done in keeping records of their meetings and discussions.

The following presentations were also made:

Millbourne Prize.—Mr. P. C. Bishop (South Eastern), for his paper, 'Gas-works Chemical Control.'

S.B.G.I. Silver Medal.—Dr. F. J. Eaton (North Thames), for his paper, 'Rating of Solid Fuel Appliances.'

President's Prize.—Mr. N. D. B. Harris (North Thames), for his paper at the Association's short paper meeting.

The President thereafter read his presidential address which will be dealt with in a subsequent issue of the *Journal*.

Publications Received

Notes on Gas Distribution, by John Terrace, M.I.C.E., M.INST.GAS E., F.INST.F. (Hon. Secretary of the Institution of Gas Engineers), is a compilation from papers presented to the Institution and other gas associations. It is published by Ernest Benn, Ltd., price 42s.

New Economy Memoranda for Cement.—In continuance of the campaign for greater economy in the use of building materials, the Ministry of Works has now issued two Economy Memoranda for Cement. (No. 1: Cement for Housing and Small Scale Building; No. 2: Cement for Engineering and Large Scale Building; H.M. Stationery Office, price 3d. each). The Memoranda are the outcome of an investigation, begun last year, in which previous recommendations were examined in consultation with representatives of professional institutions, research associations, the building industry, the cement industry and Government departments. Both stress the advantages and economies accruing from the use of ready-mixed concrete and bulk delivery of cement and from measures on the site such as careful quality control, proper mix proportions of mortars and renderings, and selection of aggregate sizes. The Memorandum for housing and small scale buildings gives detailed recommendations for mixes for more than 20 operations.

Economical Domestic Heating, by H.G. Goddard, M.A., F.R.I.B.A., is one of the 'Architectural and Building Series,' edited by A. M. Chitty, M.A., F.R.I.B.A., and published by E. and F. N. Spon, Ltd. (price 21s.). The book gives a short survey of the physiological requirements for comfort and then sets out to show how these can be achieved economically. Thermal insulation is dealt with and types of fuel and methods of using them are considered. The effects of planning on heating economics are discussed and among other aspects touched upon are solar heating and the heat pump. The book, which is written from the angle of the architect, does not claim to be exhaustive.

Street Lighting, by J. M. Waldram, B.SC., F.INST.P., F.I.E.S., on the other hand, is certainly an exhaustive treatise on the subject. The mechanism of street lighting is outlined and the effects of the variables in an installation are discussed. The layout of installations of various types is considered and equipment comes in for detailed comment. Chapters on gas lighting have been contributed by L. T. Minchin, B.SC., M.INST.GAS E., F.I.E.S. This book, which is profusely illustrated, is Vol. XII of 'The Roadmakers' Library,' edited by Dr. P. E. Spielmann. It is published by Edward Arnold & Co., price 65s.

NEW TAR PLANT AT NORMANBY PARK

NEW tar distillation plant of the Normanby Park Tar Supply Co., Scunthorpe, was officially opened by Colonel H. C. Smith, C.B.E., D.L., J.P., Chairman of the Gas Council, on October 3.

The new plant comprises a pipe still and continuous tar distillation plant supplied by the Chemical Engineering Wiltons, Ltd., together with a new blending plant and storage plant for the manufacture of road tar and tar fuels. There are also new pitch bays, laboratory, and offices. The whole plant is capable of handling 150 tons of crude tar per day. The plant distils the tar produced from the coke ovens of the neighbouring steel works of John Lysaght's (Scunthorpe) Works, Ltd., together with some supplied by the East Midlands Gas Board, the company now operating on a co-operative tar scheme basis.

Left to Right: *Colonel H. C. Smith, C.B.E., Chairman of the Gas Council; Colonel W. M. Carr, C.B.E., Chairman of the Normanby Park Tar Supply Co., Ltd.; the Mayor of Scunthorpe, Alderman H. Spencer, J.P.; Mr. W. L. James, General Manager, John Lysaght's Scunthorpe Works, Ltd.; and Mr. Sydney Smith, Chairman of the East Midlands Gas Board.*

At an informal luncheon preceding the opening Colonel W. M. CARR, C.B.E., Chairman of the Normanby Park Tar Supply Co., Ltd., welcomed the guests who included, as well as Colonel Smith, the Mayor of Scunthorpe, Alderman Spencer; Mr. W. L. James, John Lysaght's (Scunthorpe) Works, Ltd.; Mr. H. F. H. Jones, Deputy Chairman of the Gas Council; Mr. Sydney Smith, Chairman of the East Midlands Gas Board; Mr. W. MacFarlane, President of the Association of Tar Distillers; and Mr. C. Lord and Major A. G. Saunders, Past Presidents of the Association of Tar Distillers. The Mayor replied for the guests, thanking the steel and other industries of Scunthorpe for keeping in the forefront of industrial development.

At the opening ceremony at the works, Colonel Carr said that the plant was among the most up-to-date in the country and that the benefit of its efficient working under the co-operative scheme arrangement would be fully shared by the producers of tar.

Colonel SMITH, in opening the plant, referred to his 25 years of happy and harmonious co-operation with tar Distillers under one of the original co-operative schemes in the south. He was convinced it was the best method of disposing of the tar, and was pleased to see the steel industry joining the gas industry in this project.

Colonel Smith then unveiled a plaque.

Mr. W. L. JAMES, General Manager of John Lysaght's, referred to the tar distilling industry's part in making the steel industry independent of imported fuel oil for burning for steel making in time of war, and referred to the work done with tar fuels and blast furnace gas in this connection and the excellent results obtained.

Mr. JOSIAH B. LANE, a Director of the Normanby Park Tar Supply Co., concluded by paying tribute to the carbonising industry for its efficient use of the nation's coal supplies. While realising the comparatively small part of the tar distillers in this industry, he hoped that by the extraction of the valuable chemical raw materials they too contributed to the country's economy.

The proceedings were concluded with a presentation to Colonel SMITH, and inspection of the new plant.

The plant produces continuously:—

Crude benzole 0°—140°C.
Crude naphtha 140°—170°C.
Carbolic oil 170°—200°C.
Naphthalene oil 200°—230°C.
Creosote oil 230°—300°C.
Anthracene oil 300° + °C.
Pitch 30°C. K. & S. to 80°C. K. & S.

The versatility and ease of control of the plant maintain products well within the above temperature ranges or any required modification thereof, and the distillation is carried out with the minimum of fuel consumption, labour, and maintenance.

The tar acid plant consists of three 8,000-gal. vertical cylindrical washers, cresylate storages, sulphuric acid springing pans, and all the necessary storages. This plant is being further modernised by the installation of a continuous impurity stripper and carbon dioxide gassing towers for the liberation of the crude tar acids from the cresylate. The carbon dioxide will be in the form of flue gas from the Wilton distillation plant after burning blast furnace gas as a fuel.

The blending plant is used for the production of road tar and creosote/pitch mixture. It consists of four 30 ft. x 8 ft. horizontal cylindrical air agitated mixers, each capable of mixing 9,000-gal. batches. The pitch is run direct to the mixers from the Wilton plant and the creosote by gravity from three overhead storages, each of which contains a different grade.

There are six 3,000-gal. pans for cooling of the washed naphthalene oil. After solidifying and draining, it is centrifuged in two electrically-driven centrifuges capable of producing one ton per hour.

Ample lagged overhead gravity loading storages are provided for quickly filling road and rail tanks with hot road tar, creosote/pitch mixture, etc., and for the maintenance of the above plant there are a well-equipped fitting shop, carpenter's shop, and pipe and fitting stores.

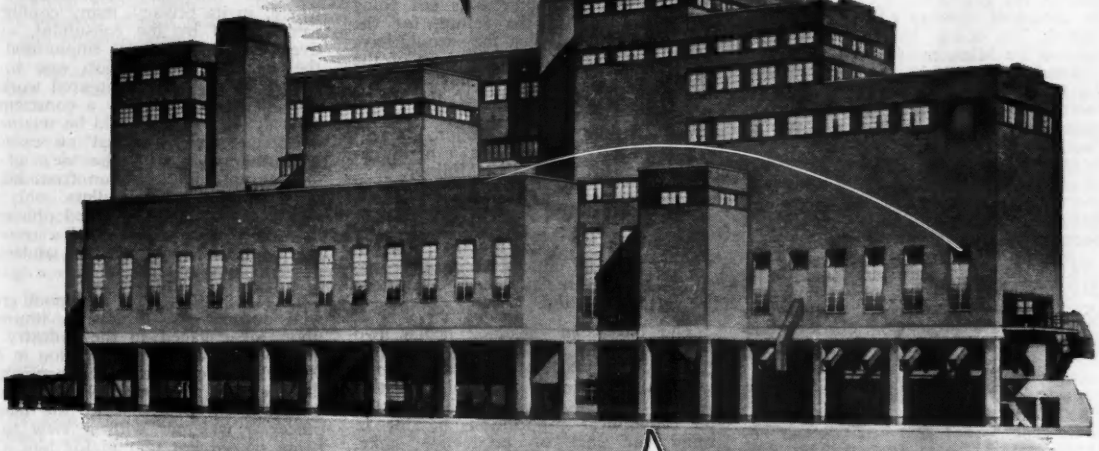
Training for Industry Exhibition

THE DUKE OF EDINBURGH will on November 3 inspect an exhibition at Goldsmiths' Hall showing the work of the City and Guilds of London Institute, of which he is President. The Institute was founded in 1878 by the Corporation and certain Livery Companies of the City of London for the advancement of technical education. The exhibition, entitled 'Training for Industry,' has been arranged in connection with the Institute's yearly meeting, over which the Duke will preside.

The exhibition will be open to the public from November 4-14, by permission of the Wardens of the Goldsmiths' Company. Features of the exhibition will be models of scientific and engineering equipment, including a supersonic wind tunnel, from the City and Guilds College, South Kensington; students' work in fine arts and crafts from the City and Guilds Art School, Kennington; and a pictorial presentation of the work of the Institute's Department of Technology which covers nearly 200 subjects—from bread-baking to boiler-making, mine-surveying to aeronautics, and carpentry to cookery.

This will be the first time a member of the Royal Family has presided over a yearly meeting of the Institute since 1882.

W-D Continuous Verticals for Dalmarnock



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SCOTTISH GAS BOARD
has just ordered a 7 million cu. ft.
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Dalmarnock Works in the Glasgow Division.

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North Western Conference

1,000 Officers and Staff at Blackpool

UPWARDS of 1,000 officers and members attended the third annual conference of the North Western Gas Board in the spacious Empress Ballroom of the Winter Gardens, Blackpool, on Friday and Saturday, October 10 and 11.

Proceedings opened with a civic welcome extended in a brief speech by the MAYOR (Councillor Peter Fairhurst, J.P.) and complimentary references were made to the hospitable way in which His Worship and the Corporation entertained over 800 guests at a reception and dance on the Thursday evening.

Mr. D. P. WELMAN, Chairman of the Board, presided. With him on the platform were distinguished personalities in the gas industry, including Mr. A. Henshall, Deputy Chairman of the Board; Mr. Keith Stock, Under-Secretary to the Minister of Fuel and Power; Colonel H. C. Smith, C.B.E., D.L., J.P.; Sir Eric Carpenter; Councillor C. E. P. Stott, J.P., Chairman of the Gas Consultative Committee; Mr. W. W. B. Stoddart; Dr. G. O. Hughes, Chief Medical Officer of the Board; Mr. H. F. H. Jones, Deputy Chairman of the Gas Council; Mr. H. Butters, member of the Board; and Mr. F. G. Brewer, Secretary to the Gas Council.

After Mr. BUTTERS had thanked the Mayor, Mr. WELMAN remarked that people associated with the industry in the area were present in greater numbers than last year or the year before.

Decentralisation

Colonel SMITH said that those of them who, 3½ years ago, had any part in the making of suggestions as to what should be the future organisation of the industry when it became publicly-owned were firmly convinced that whatever happened the industry should be organised on the basis of decentralisation, and of giving the local manager the utmost powers of authority. Legislation was passed in such a form as enabled them to carry out that principle. Authority, naturally, carried responsibility. Young people coming into the industry would have to bear in mind that it was not sufficient to qualify technically, as engineers, accountants, or on the secretarial side; some of them must prepare themselves for the wider duties of management.

The industry had been, to some extent, a sheltered industry. They had not been up against the cut and thrust of competition as some other industries. Particularly during the war years, and since domestic coal had been rationed and solid fuel for industrial purposes had been restricted, it had been quite easy to sell gas; but it was not going to be so easy in the future, for the time was coming when they would have to go out to sell gas. Members of the Board and of the Gas Council realised that many felt a sense of frustration that they were not allowed to go out to-day to sell. That restrictions on selling must be removed was a matter to be impressed upon the Minister.

Combined Operations

Mr. W. S. HUBBARD and Mr. S. ASHWORTH then introduced their paper entitled 'Towards Combined Operations in Gas Production.'

The discussion occupied nearly two hours. Replying, Mr. ASHWORTH said that regarding the closing down of small units, the authors only endorsed this when it could be shown that it was an economical proposition, bearing in mind the cost of production, coke, transport, etc.

Mr. HUBBARD also replied, mentioning the conservation of steel as a result of being able to work with less storage in an integrated system and, at the same time, eliminate the need for excessive capital expenditure in that direction. Most of the speakers accepted the fact that integration and combined operations in one form or another would lead to reduced costs and greater efficiency. Opinions would always differ as to the most economic size of any unit or groups of units, but in the opinion of the authors the present groups, operated independently, seemed large enough to make the most of the possibilities of integration.

At the afternoon session, Mr. WELMAN said the Board were most interested in the provision of First Aid and medical services throughout their area. For that reason, Dr. G. O. Hughes, Chief Medical Officer to the Board, had been invited to submit a paper on the subject.

Dr. HUGHES said that the workman and the employer had a joint interest in capital, and in accepting the responsibility for the health of those at work they showed a justification for medical services. Dr. Hughes took the audience into an imaginary consulting room where, in its privacy, many confidences were shared by the consultant, executives, and workers. He emphasised that the medical officer's job was to see what kind of work an injured workman was fit to do, and how a conscientious and capable worker could be retained in industry. The fears that an examination was made with the view of dismissing an injured person from his job were absolutely groundless. It was now accepted by enlightened opinion in industry that employers had a responsibility for the health, welfare, and safety of their employees.

Dr. DUNCAN, of the Liverpool group, who opened the discussion, impressed upon all engaged in the industry the necessity for active participation in First Aid. He had been very fortunate in that respect at Liverpool. When an injured man was sent to the medical officer it was not with a view to his being sacked but to find for him a job that he could do. They wanted First Aid in all departments of the gas industry. Those in positions of authority must set an example to the men under them. At Liverpool every facility for training was given.

Physical Assessment

Mr. DEAN, also of Liverpool, who had co-operated with Dr. Duncan in bringing the medical scheme to its present standard, said he preferred the description 'physical or functional assessment' to 'medical examination.'

Dr. HUGHES commented that he had found in the North West a readiness to co-operate and that the people welcomed the idea of having an efficient medical service. The medical officer made an assessment of a person's working capacity and reported it to the management.

The remainder of the afternoon, of the 10th, the early part of the morning of the 11th, was devoted to questions and answers. Mr. Welman was 'under fire' for nearly three hours.

A wide variety of subjects was covered. On Civil Defence training the CHAIRMAN said the question was a difficult one. From the area point of view they were taking steps to train to in-

The Empress Ballroom of the Winter Gardens, Blackpool, was thronged for the conference of the North Western Gas Board.

structor level as many men as they thought they might need as instructors and, for the moment, that was as far as they intended to go. Given sufficient well-trained instructors then they could readily train the main body of the Civil Defence workers.

The Chairman explained at length the scheme for the training of juniors and re-iterated that when the ban on advertising was lifted the Board would put into effect the very comprehensive scheme they had prepared to meet severe competition.

Mr. BUTTERS, Chairman of the Education Committee, enlarged upon the Chairman's reply concerning education, and said the scheme presented one of the most difficult tasks the Board had had to face.

Mr. H. F. H. JONES, Deputy Chairman of the Gas Council, commented upon the keenness prevailing in the various groups and hoped the spirit of co-operation would continue. He had always believed in men rather than systems and organisations.

Mr. WELMAN then gave a closing address, in the course of which he said:—

'I do not propose to deal at any length with our activities on the production, distribution, or construction and maintenance sides, except to say that the figures for production efficiency have steadily improved—in some cases remarkably so. I think the following figures for the area average speak for themselves:

1949-50	... ...	71.2%
1950-51	... ...	71.68%
1951-52	... ...	72.65%

'Latest figure for August this year, 74.55%.

'The gain from this improvement in efficiency can be readily seen if we assume that during 1951-52 we had been working not on 72.65% but on the 1949 figure of 71.2%. If we do this we find that we should have used 70,000 tons more coal and we should have made 36,000 tons less coke. The figure we have now reached is improving steadily, and I hope it will not be long before we can reach the target figure of 78%.

Distribution Progress

'On the distribution side, despite difficulties in the delivery of cast iron pipes, capital, and other problems, we are making excellent progress, and the economy which will arise from the base-loading of selected stations and the closing-down of uneconomic plant will steadily make itself more evident. We have already closed down 10 uneconomic stations, and estimating on a conservative basis and after accounting for all capital charges involved we expect that the result in saving will be something just over £62,000 per annum in operating costs.

'Certain sections of the public, and particularly perhaps those politically involved, complain that the price of gas has risen consistently in recent years, and is now too high, and there are those who would attribute both these things to the fact of nationalisation. If we look for a moment at the cost of other essential commodities, we find that, although the cost of coal, transport, and many other items over which we have no control have risen against us to force up our prices, the price of gas has risen less than any other of the essential commodities. An examination of the last available figures for the country also shows that with our own average price at 11.93d. per therm, we were offering gas at a cheaper price than any of the other area boards, with the exception of three, which are able to draw cheaply upon coke oven gas produced as an industrial by-product.

The Mayor of Blackpool welcomes the 1,000 delegates of the N.W.G.B. With him on the platform are (left to right) Mr. D. P. Welman, Chairman of the N.W.G.B.; Mr. S. G. Deavin, Secretary to the Board; Mr. H. F. H. Jones, Deputy Chairman of the Gas Council; and Mr. H. Butters, Member of the Board.

'I quote these facts in order that we may keep our sense of proportion, but it is clearly our primary duty never to be satisfied that the price of gas is low enough, consistent with good service.

'The Board has in the initial years had to face in this area exceptional conditions, and it has been vital to our future that we should spend very large sums upon the underpinning of our capital assets, due mainly, I am afraid, to the omissions for one reason or another, of certain of our predecessors. The nature of this expenditure is such that it must properly be paid out of revenue and not out of capital, and the Board has felt it quite improper that prices to the current consumer should be raised to recover in any one year the amounts spent on comparatively long-term work of this kind. Prices were fixed at the last revision to enable the Board to break even at the end of this year, while progressively writing off extraordinary revenue expenditure of this kind.

Falling Demand

'Demand in all sections has been falling in recent months, and we have to meet, not a conservatively estimated rise in gas demand of 4%, but an actual decrease at this moment of just over 3%. Clearly, if demand goes down, all things being equal, prices must go up and this we must avoid. We have in this area vast untouched possibilities in the commercial and industrial use of gas, and it is upon this side that we must now bend our endeavours to the fullest extent.

'The coke stock position throughout the area at this moment is about 277,000 tons, and I know that many of you are concerned at the space that it is occupying and the additional handling charges involved. Personally, I think that we shall comfortably dispose of this stock during the coming winter, but I am concerned that we are not yet anything like in the position we should be if we are to call ourselves a "two-fuel industry." I am satisfied that throughout the area, and perhaps I might even say throughout the industry, there is a vast amount of education needed in the ranks of all those who handle coke, before we shall achieve a second fuel of high quality without undue wastage.

'Turning to the report of the Ridley Committee, one of its main recommendations means that we must be permitted openly to carry our sales message to the public, and that we shall be released from the ban upon advertising which has already done so much, and, I fear, lasting, damage. With the lifting of the advertising ban we can expect the full force of the blast that has been in preparation for many months by the Electrical Development Association, and, I presume, the electricity boards. We do not intend in the North West to be found wanting at this important hour.

New Showrooms

'We have in the intervening period taken steps to improve sales facilities by the purchase and fitting of additional showroom premises where none existed, and by combining our showroom activities directly with the service side of our organisation. In many places excellent progress has been made on these lines, but we have been, and still are, badly hampered, first by the inability to obtain licences for building work, which difficulty has not been helped by the attitude of mind of certain uninformed sections of the public, and, secondly, by the ban on advertising. Despite, however, the unsatisfactory tools with which many members of our sales organisation (in which I also include the service side) have to work, the fact remains that our overall sales figures compare most favourably with other area boards, and I am not in any doubt as to what they can achieve given the tools and the freedom to use them.'

Continuous Verticals in Ireland

By J. T. BRADSHAW, B.Sc.(Tech.), Assoc.M.Inst.Gas E., M.Inst.F.

Paper presented to the Irish Gas Association, Londonderry, September 16, 1952

THE wide disparity between the population and size of the few principal cities in Ireland and those of the country towns is naturally reflected in the size and output of the gas undertakings, which range very unevenly from two large ones down to numerous very small units.

Over considerable spans in the scale of size Ireland has no representative gasworks at all—for instance, there is nothing between one unit making approximately 680 mill. cu.ft. per annum and the two largest which each make upwards of 4,000 mill. Out of a total of 49 undertakings, no fewer than 31 each make less than 50 mill. cu.ft. per annum. It can, therefore, be readily appreciated that the problems of the gas industry in Ireland are very different from those of Great Britain. The distribution of vertical retort systems in the Irish industry is shown in the following table:—

Size of Works (mill. cu. ft. per annum)	Number of Works	Number using C.V. Retorts	Percentage using C.V. Retorts
Below 50	31	*Nil*	*Nil*
50-100	4	2	50%
100-150	7	5	71%
150-200	2	2	100%
200-400	2	2	100%
400-1,000	1	*Nil*	*Nil*
Above 1,000	2	2	100%

It is interesting to notice that in Ireland examples of continuous vertical retort installations are to be found in undertakings of all sizes except those below the 50 mill. mark—indeed, there are only five exceptions to the use of the system in the 18 undertakings above this size.

It is clear that the advantages of the C.V.R. systems on all but the very smallest works are clearly recognised by the Irish gas industry, but in view of the great diversity in size and age of the installations it may perhaps be of interest to describe briefly typical examples in each range, and to show how certain of the early installations would appear if they were to be built as new projects to-day.

It should be noticed that the fundamental unit of these installations, the retort itself, is basically the same whatever the size of the plant. The larger ones are multiples of the units used in the small works, so that the differences become chiefly a matter of arrangement and of handling plant.

Large Installations

As an example of an installation in the 'large' class, Ireland's largest presents many points of interest. Not only are all the six retort benches, totalling 284 retorts, housed in virtually one retort house, but they are also of widely varying age and design. This concentration of plant with a nominal capacity of nearly 23 mill. cu.ft. of gas per day in a single house occupying an area of 3,535 sq. yds. or 0.7 acre, is not to be recommended as an ideal, but does strikingly illustrate the C.V.R. system's claim of high output per unit of area. In this particular case this property enabled the output from an old-established site of limited area to be increased many times, and avoided the heavy expense which would otherwise have been incurred by opening up a new site.

Fig. 1 shows a ground plan of the retort house. On the left is 'A' bench of 40 retorts of the 33 in. model, which together with its neighbour was originally built in 1912. A reconstruction in 1923 increased the gas output by 50% and a further reconstruction just after the last war brought the bench into line with modern practice.

The settings were rebuilt to the 'balanced heating' design which enables units of four retorts in line to be heated with as high a transfer efficiency as units of two, with greatly reduced heat losses from the walls. The details of this method of heating have been fully discussed in a paper recently presented elsewhere* by one of my colleagues, but it may be mentioned that the success of the method is due largely to a rigid adherence to the principle of single-stage combustion. Not only does this ensure flame characteristics which achieve the maximum heat transfer by radiation, but by obviating the presence of waste gases in the vicinities of the burner ports enables the fuel gas to develop its maximum energy emission. The system also lends itself to a very precise and accurate means of controlling the flow of fuel gas and air to each of the combustion chambers.

The general arrangement of the producer side wall of the setting is now often employed in installations of retorts in units of two in line. This design may be looked upon as half a 'balanced heating' setting, and enables smaller installations to take advantage of improved control and accessibility.

The top ironwork of the retorts was replaced by the latest design. In this arrangement the collecting mains are carried at approximately the same level as the operating platform, with greatly improved accessibility compared with the older high level mains. The retorts are connected to these mains by short bridge pipes which incorporate liquor sprays and individual positive type gas offtake valves. Here again accessibility is greatly improved and the very short offtakes reduce to a minimum any refluxing of tar condensates on to the coal charge in the retorts.

Coke is discharged on to a troughed band conveyor which delivers to the existing telpher handling system.

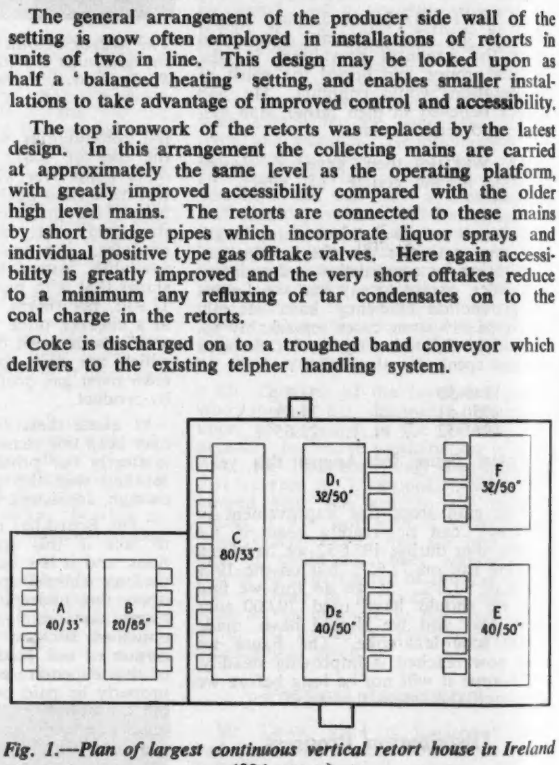

Fig. 1.—Plan of largest continuous vertical retort house in Ireland (284 retorts).

The adjoining bench, 'B,' following its earlier 1923 rebuild, was completely reconstructed in 1937. The units of four 33 in. retorts were converted to two 85 in. retorts, making a total of 20, which enabled a greater total major axis length of retort to be built within the original width of bench. The increase in gas output obtained in this way does not bear a linear relationship to that obtained by stepping up from, say, a 33 in. to a 40 in. retort, but nevertheless a substantial benefit is obtained. The coke extractors of these large retorts consist of two worms working in parallel in a single casting. The worms are driven by a single wormshaft, ensuring constant relative speed, and extraction proceeds very regularly along the length of the retort.

Bench 'C,' of 80/33 in. retorts was built in 1915 and reconstructed in 1930. The unit retort size was not changed, but the length was increased to 25 ft. This bench, though

* Fuel Economy in the Gas Industry—M. S. Gaskill, Wales and Monmouthshire Section, I.G.E., May, 1952.

something of an old-stager from the design angle, is still working well.

'D' bench, originally a contemporary replica of 'C,' and first rebuilt in 1927, is in course of complete reconstruction to 50 in. retorts of a fully modernised design. It is not now considered good practice to build benches containing more than five settings, so one setting is being sacrificed and the plant built as two benches of four and five settings each. It is interesting that in spite of the loss of a setting, the nominal capacity of the new plant, 6,480,000 cu.ft. per day, is over twice that of the original bench.

'E' and 'F' benches were built in 1945 and 1950 respectively, and incorporate most of the features of modern design already described under 'A' bench. In addition, twin cross conveyors of the lipped bucket type are fitted, and these handle coke from the under-bench bands to the various coke services. The plant is provided with a fully automatic skip hoist which elevates ash and clinker from the producers to a lorry-filling hopper.

All the benches in this works are fitted with induced draught waste heat boilers.

Medium Size Installations

Two of the three medium sized works in Ireland rely on continuous vertical retorts for their carbonising plant. One of these installations dates from 1914 and the other from 1923, and although both have been greatly enlarged and partly modernised since those early days, the general layout of coal and coke handling arrangements has been retained.

The usual practice of adding extensions in line with existing benches imposes restrictions in design of handling plant which are very difficult to overcome.

Where growth is gradual there is always the danger of perpetuating arrangements which would never be tolerated had not custom dulled the effect of their impact on the economy and convenience of the works. Examples of this are often seen in the manual handling of coke from retorts, which is almost standard practice on small works. The coke is discharged into hand skips which are wheeled out and tipped in the yard, or taken up in a lift to fill producer and retort feed hoppers. The yard coke is forked into bags or lorries, often with the help of the lorry drivers. As the installation grows, it is deceptively easy to put in extra men to help with these jobs without, possibly, affecting the labour cost per ton of coke sold, but eventually a point is reached where the reduction in labour which would be achieved by installing a modern handling and grading plant would amply repay the cost.

It is interesting to compare one of the older medium sized installations in Ireland with its modern counterpart.

The particular installation in point originally comprised 12 33 in. retorts in units of two, and was put to work in 1923. Coal was elevated by a fixed-bucket elevator, and discharged coke was taken in hand barrows to the yard or the producer feed hopper. Two natural draught waste heat boilers were fitted. An extension of four more retorts, to the same design, was built in 1930.

In 1939, advantage was taken of the opportunity presented by the addition of a further two retorts to rebuild this extension to the 40 in. major axis size, and it was planned to continue with the rebuilding of the original 12 on the same lines. This alteration was made at a time when shortage of cast iron made it impossible to renew all the top and bottom castings which were still in good condition. For several years the new 40 in. retorts worked with the old 33 in. fittings and very little operating difficulty was met. These first 18 retorts are built as a single bench in settings of six retorts.

A second bench of six 40 in. retorts was built in 1944. No change was made in the method of handling coke, but a lipped bucket conveyor was added to handle coal to the whole installation. The general arrangement is shown in Fig. 2.

Fig. 3 shows for comparison the general scheme for a modern installation of eight retorts arranged for a future extension to 16.

It will be seen that the arrangement of the settings has not changed radically, but the brickwork details follow modern practice. The step-grate producers are shown fitted with steam/air injectors for pressure working. A variant of this arrangement is to supply the primary air by a motor-driven fan and use exhaust steam for conditioning the blast—a method which lends itself well to automatic control of gas pressure in the common gas flue of the settings.

The structural steelwork of the retort house is encased in brickwork externally, and the chimney is shrouded by a tower structure. The V-type inverted roofs greatly improve ventilation and supplement the effect of the numerous vertical window openings. The use of steel framed windows for retort houses is not beyond criticism as it is difficult to keep corrosion in check, and an alternative arrangement of glass bricks for light and openings in the brick panelling for ventilation has much to commend it.

A more important difference between this installation and the older one already described lies in the conveying systems. As the scheme stands, a 30-ton per hour lipped bucket conveyor is arranged at one end of the bench, running across the retort house, and provision is made for duplication.

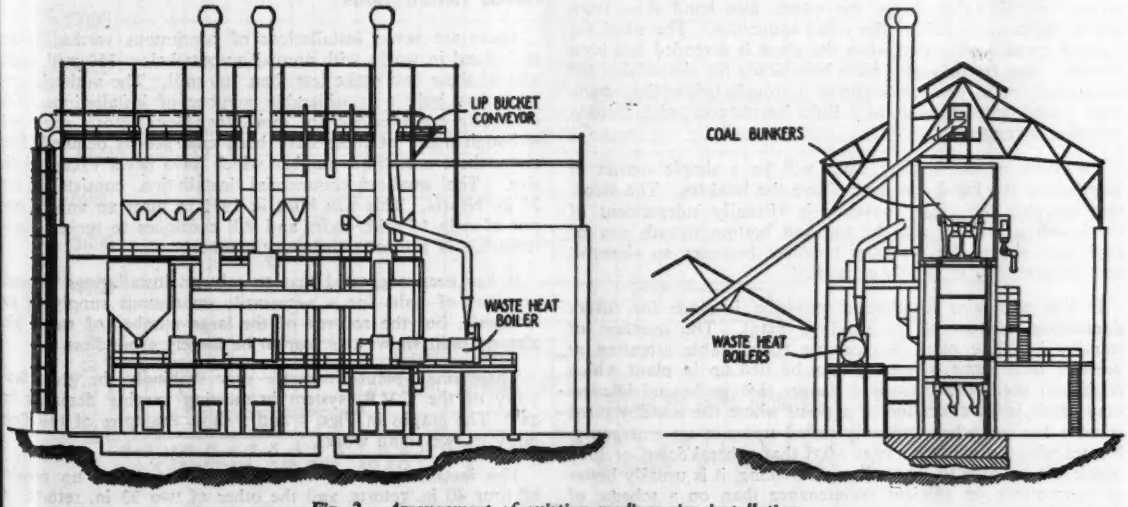

Fig. 2.—Arrangement of existing medium size installation.

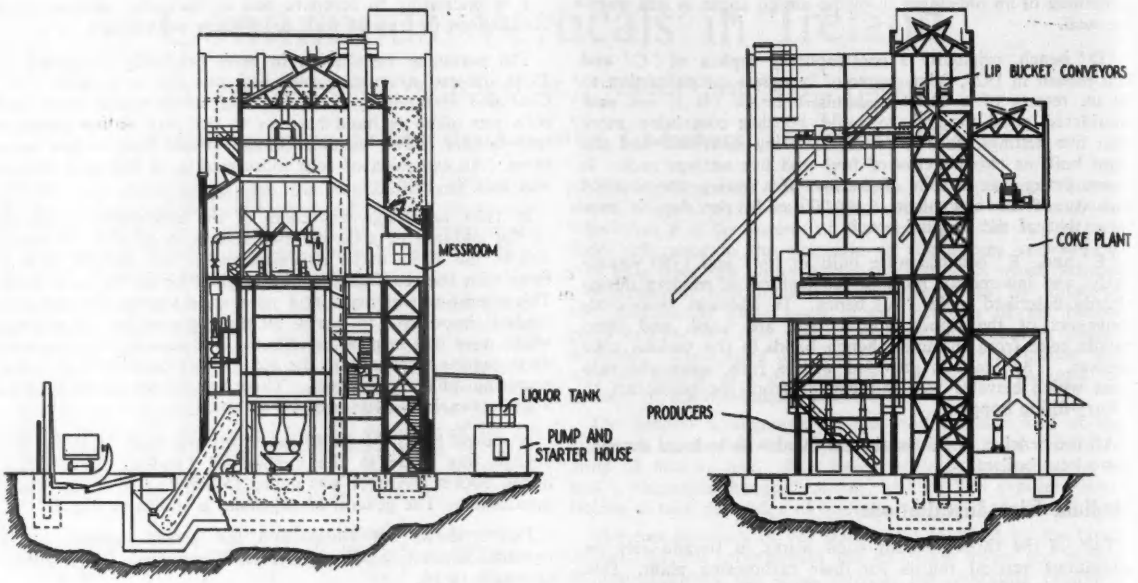

Fig. 3.—Arrangement of modern medium size installation.

The older arrangement of dual-purpose lipped bucket conveyors was to encircle the retort benches in line with the retort house. The track often included a loop for throwing off the coke which was fed directly on to the bottom strand of the conveyor from the retort mouthpieces, or alternatively the coke could be carried right up to the top strand, as was the coal, and tipped into retort and producer feed hoppers.

This arrangement could be criticised on several grounds. The chain was long, and became still longer each time the plant was extended. Accurate lining up of old and new track was difficult, and as the top track was carried on structures liable to be moved by expansion creep of the bench steelwork, it was difficult to maintain the original alignment. The arrangement lacked flexibility and more or less compelled the use of the original handling scheme, however much enlarged, throughout the life of the installation.

The advantages of the modern cross arrangement of conveyors are well illustrated in the installation shown in Fig. 3. The original plant of only eight retorts does not justify the provision of under-bench conveyors to handle coke, and the arrangement is to discharge the retorts into hand skips from which the coke is fed to the cross conveyors. The need for a more convenient system when the plant is extended has been foreseen, and arrangements have been made for simplifying the installation of a band conveyor in a trough below the bench. This would be done with very little interference with existing handling arrangements.

Extension of the coaling plant will be a simple matter of lengthening the band conveyor above the bunkers. The structure carrying the cross conveyor is virtually independent of the bench steelwork, and the top and bottom strands can be kept very short—the conveyor in effect becomes an elevator, and maintenance is greatly simplified.

In this particular installation provision is made for future duplication of part of the handling plant. The question of standby handling plant is receiving considerable attention at present; large sums of money may be tied up in plant which is seldom used, and there is a danger that prolonged idleness may result in deterioration to a point where the standby plant is unfit for use when suddenly called upon in an emergency. Except where a conveyor is so vital that a breakdown or long repair job is liable to jeopardise gas-making, it is usually better to concentrate on efficient maintenance than on a scheme of duplication.

Coal bunkers on C.V.R. installations invariably hold at least 48 hours' supply of coal so that if they are kept full, and reasonable maintenance is practised, it is unlikely that conveying plant would at any one time be out of action long enough to interfere with gasmaking.

Coke handling plant is run more constantly, but it is not usually difficult to arrange an emergency system for removing coke from the extractors. Self-propelled tipping-body skips are used for this purpose on many works, or as a last resort it is usually possible to discharge coke on to the floor and transfer it to the conveyor when repairs are completed. Producer feed hoppers are large enough to maintain supplies to the producers during any reasonable shut-down period, and the coke charging of empty retorts may usually be delayed for some hours during an emergency.

In general, therefore, the addition of standby conveyors must be considered very carefully in relation to the increased capital cost involved.

Small Installations

There are seven installations of continuous vertical retorts in Ireland in works with annual outputs below 150 mill. cu.ft., and of these two make less than 100 mill. The author's company has built a considerable number of installations which originally consisted of not more than four retorts each, and although many of these have been enlarged as demands have risen, there are still a number which have never exceeded this size. The smallest commercial installation consists of two 33 in. retorts. This was built in 1931 to meet an annual output of only 15 mill. cu.ft., and still continues to serve a small township in a most satisfactory manner.

It has been suggested that to rely on installations of small numbers of units for a necessarily continuous supply of gas is unsafe, but the records of the large number of small jobs already built shows this fear to be largely groundless.

These small plants illustrate very strikingly the great flexibility of the C.V.R. system in meeting varying demands for gas. The graphs in Figs. 4 and 5 show examples of this flexibility in two small works.

The installation from which Fig. 4 was drawn up consists of four 40 in. retorts, and the other of two 33 in. retorts. In both observations the calorific value of the gas was kept sub-

stantially constant, and the output was varied by simple adjustment of coal throughput and steaming rate.

Where a more prolonged drop in output is anticipated, as at week-ends and holiday periods, retorts are emptied and valved off. The practice of standing retorts full of coke which is sometimes noticed on small works should be avoided wherever possible—the risk of damaging retort brickwork by slag attack or overheating is very real.

With occasional help from a yard man, these small installations are normally run by one stoker per shift. Extra day labour for coal handling may be required with certain types of handling plant and when coal is delivered by road, but even where necessary does not amount to more than two or three man-hours per week-day.

A small skip hoist for coal and coke elevating is a successful arrangement on small installations. These hoists are simple and effective, and demand very little in the way of maintenance or skilled attention. By suitable positioning in the first place, the way is left clear for the installation of more ambitious handling systems if the plant is later extended to a size which merits such action. The alternative to a skip hoist on small installations is a combined goods and passenger hoist. This arrangement can be made to fit in well with future extensions, and is a great personal convenience, but is rather slow for handling coal and coke.

A small installation was erected in Ireland about four years ago. The plant was arranged as an independent extension of an existing installation of six 40 in. retorts, and consists of four 40 in. retorts in units of one. Each retort may be looked upon as a complete setting, and may be cooled down without interfering with the operation of its neighbours. The latest design of retort top ironwork was incorporated and an independent liquor system fitted to supply clean liquor for the gas offtake sprays. The top of stack is remarkable for its open and accessible arrangement of the fittings.

The bottom fittings of the retorts embody worm type extractors, and the coke mouthpieces are fitted with sealed water drains to take away the surplus water from the sprays in the extractor chambers. Accessibility is very good and the whole of the extractors and water sprays are well maintained with the result that coke discharges are very cool and virtually dust free.

The installation is fitted with three small step-grate producers, one of which is always in reserve. The settings work under natural draught but provision was made for fitting a waste heat boiler if future extensions make this worth while. Coaling is done by an existing bucket conveyor which was extended, and coke for producers and retorts is taken from existing hoppers.

It may perhaps be interesting to mention that the average output of the experimental and research plant in the works of the author's company exceeds that of some seven or eight gas undertakings here in Ireland. The carbonising plant always consists of one experimental vertical retort which in its peak year carbonised 1,137 tons of coal. Gas made within the statutory limits of calorific value and purity is passed into the public supply mains, and so, while the plant may claim to be the smallest vertical retort installation, it is by no means the smallest gasworks.

Supplementary Gasmaking Methods

There are occasions on most works, owing to shortage of coal and increased demands, when alternative fuel would be of considerable help, and it is proposed to mention briefly some of the methods which have been achieved in this direction. It is not proposed to mention all the alternatives which are now available, as many of these have been described in detail elsewhere, but the following systems of which the author has had personal experience have been found very useful in certain circumstances.

Water Gas Plant

The usual supplementary plant in use with C.V.R. installations is a carburetted water gas generator. Its position is too well established to call for more than a passing reference here but one or two points may be worth mentioning.

(*Continued on page 227*)

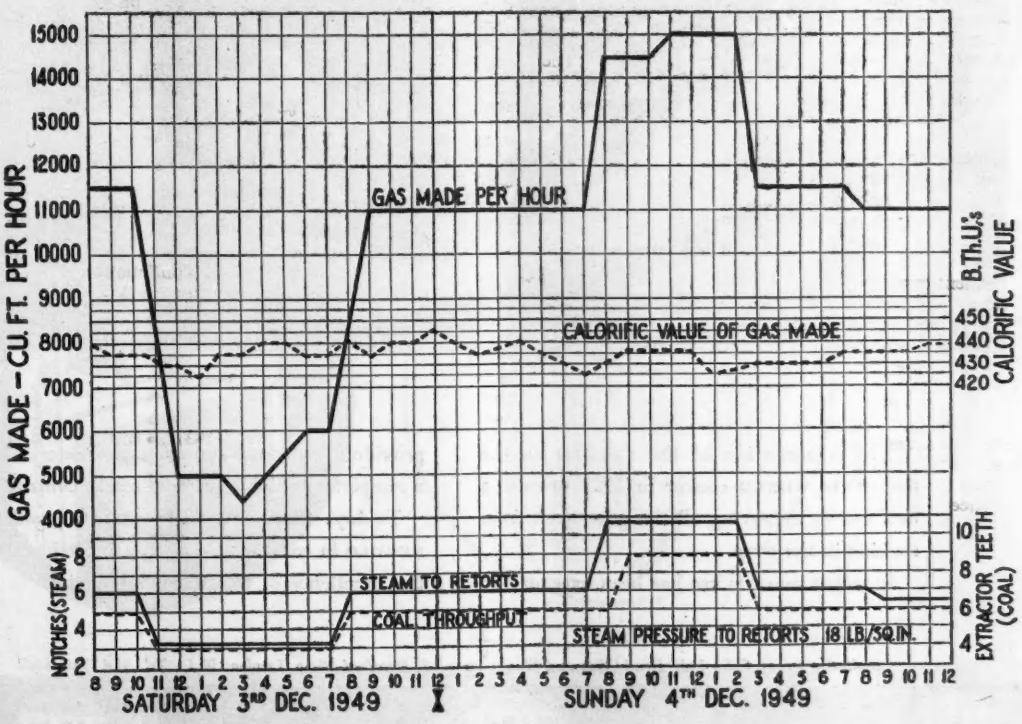

Fig. 4.—Graph showing flexibility of output with coke extraction and steaming rates.

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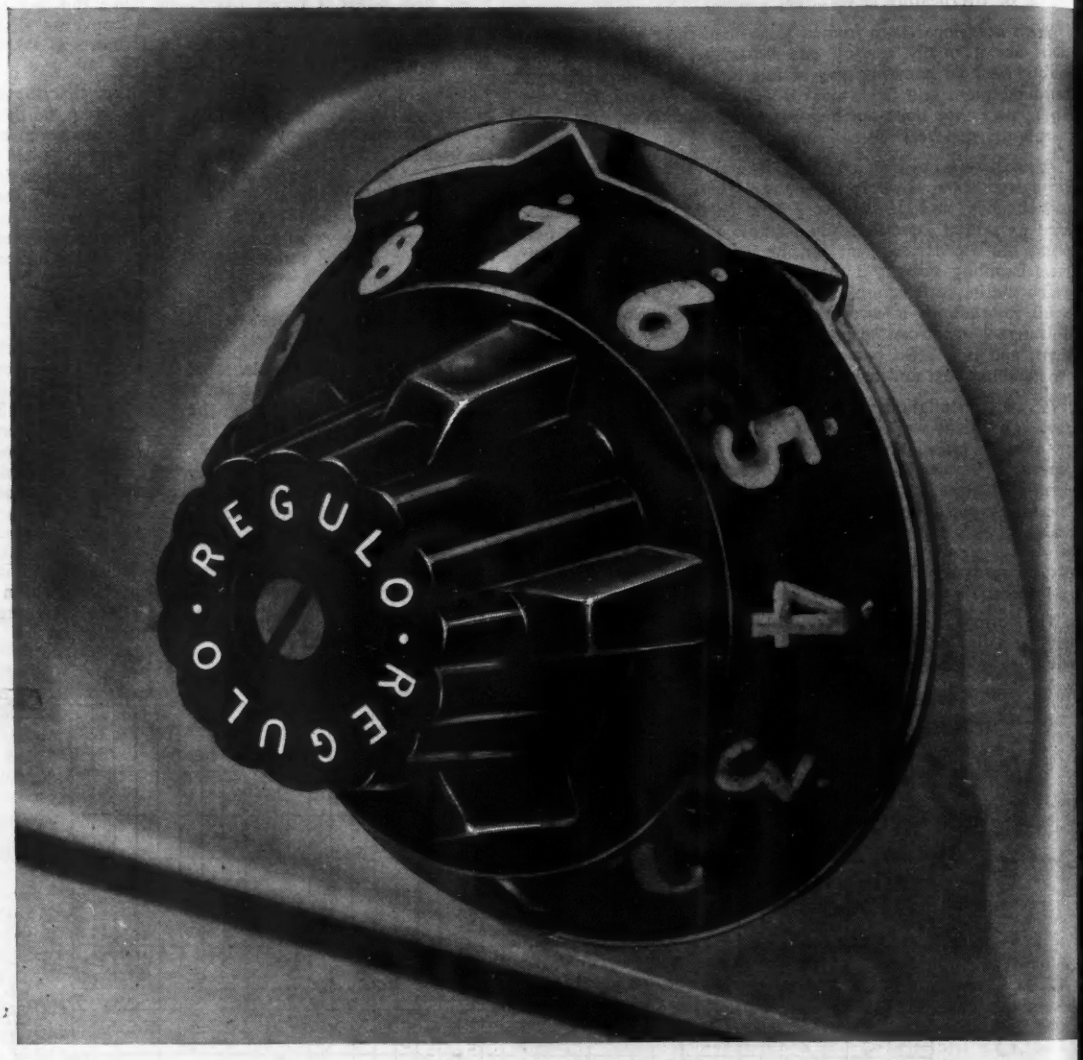

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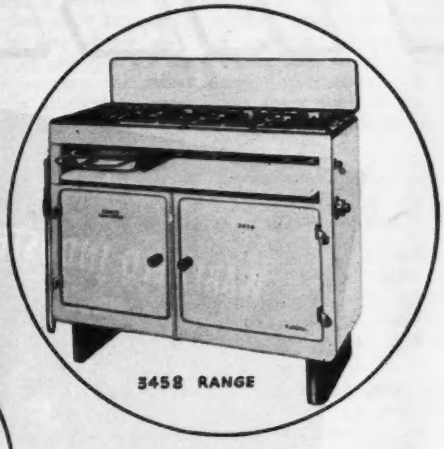

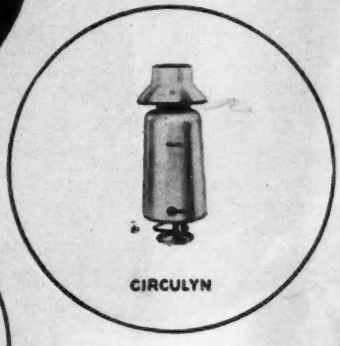

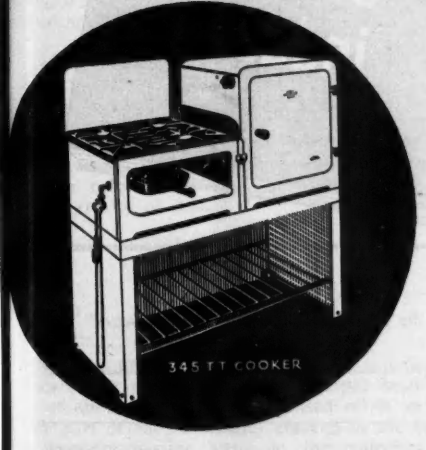

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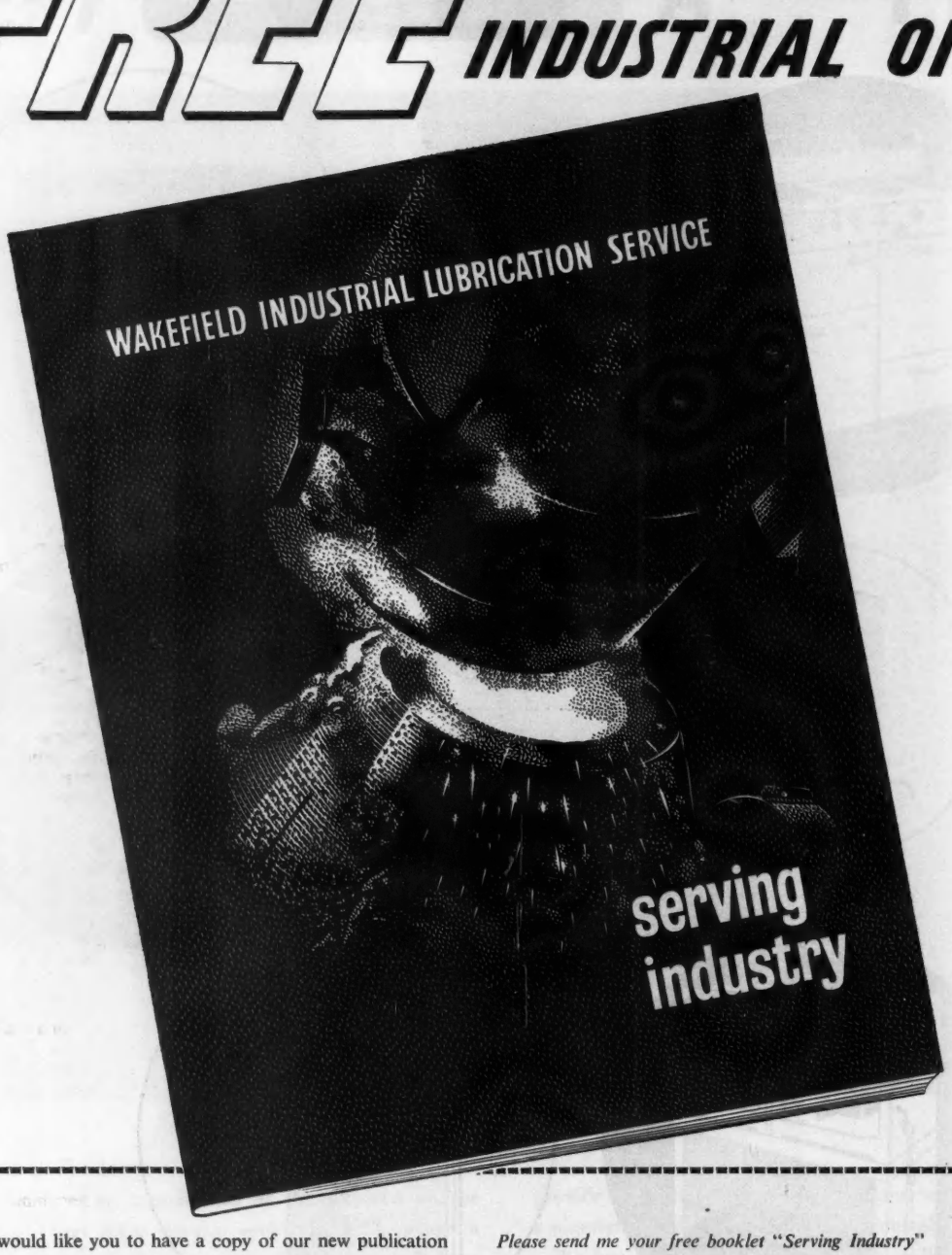

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If a C.W.G. plant is used for extended periods in conjunction with small C.V.R. installations, the amount of coke available for sale falls very considerably, and the loss of the steady day-by-day revenue normally obtained from this source proves a serious embarrassment to small undertakings. The higher the yield of gaseous therms from the primary gasmaking plant, the more this effect is felt. The position is eased if waste heat boilers are available and if the primary plant is making a high value gas, but the drop in coke sales is always serious.

With larger C.V.R. installations the effect is much less serious and indeed the C.W.G. plant may prove a useful means of smoothing out the variability of coke sales.

Oil Gasification in Continuous Vertical Retorts

Gas oil, or other oils of a light type having a suitably low C/H ratio, may be decomposed thermally into permanent gases, tars, and coke at a reasonably high efficiency.

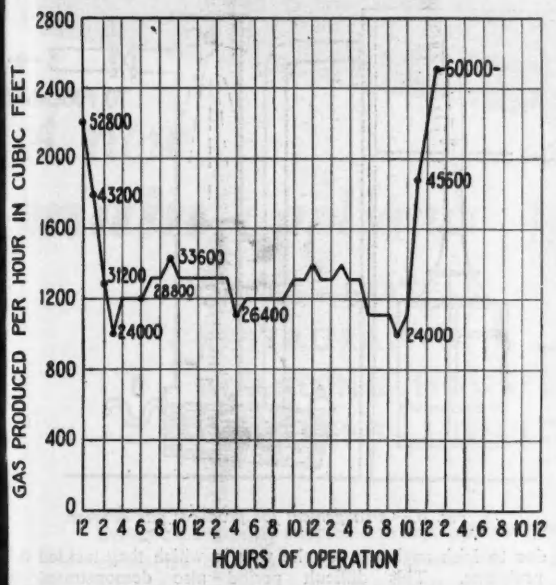

Fig. 5.—Graph of hourly output from small installation, showing increase and decrease actually obtained to correspond with heavy fluctuation in gas consumption. The figures marked on the curve are equivalent values in cu. ft. per 24 hours. Calorific value maintained constant at 450 B.Th.U. per cu. ft.

This is, of course, the basis of the carburetting process in a C.W.G. plant, but an empty vertical retort may be used as a carburetter/superheater. The gas produced varies in composition according to the temperature of the retort and the space-time factor involved, but under normal conditions it has a calorific value of 1,400 B.Th.U. per cu.ft. and a specific gravity of 0.84.

A typical analysis is as follows:—

CO_2	0.3	CO	1.8
O_2	0.1	C_2H_6	12.1
CnHm	33.6	CH_4	35.0
H_2	10.8	N_2	6.3

The oil is finely atomised with steam and the spray injected vertically up a retort with an internal brickwork temperature of about 750°C. The atomised oil is vapourised in the lower part of the retort and cracked in the upper, the gases and vapours passing away to the collecting main in the usual manner.

The retort brickwork temperature is critical and this makes it difficult to use a single retort for oil gas if the others in line with it are to continue to carbonise coal, but this difficulty does not arise on an installation with retorts in units of one. Providing the retort temperature is within the correct limits, the process is controlled by using the appearance of the gas as a guide—overcracking, caused by too high a temperature or space-time factor, results in a dark coloured gas and is corrected by increasing the feed of steam and oil. Conversely, undercracking is shown by a pale, steamy looking gas and is corrected by reducing the feed. It is found in practice that once the right conditions have been found, the process is very stable and will continue to work with a minimum of attention for some weeks, after which it becomes necessary to shut the retort down for scurfing. If overcracking is allowed to persist, the upper part of the retort speedily chokes up with lampblack, which must be removed by scurfing.

It is possible to gasify between 30 and 40 gal. per hour in a 50-in. retort, which thus produces about twice the output of gaseous therms obtainable when carbonising coal.

The factor which normally limits the extent to which this process may be applied is the high calorific value of the oil gas. It is reduced by making a low value gas on the retorts carbonising coal, or by addition of producer gas, but the high specific gravity of the mixture limits the amount which may conveniently be used.

In addition to being used as a means of temporarily increasing the gas output, the process is also useful for reducing the weight of coal used during periods of scarcity, and as a means of producing useful therms from retorts that have reached the end of their normal life but which cannot immediately be let down for repair. Old retorts which cannot handle coal because of surface roughness or distortion will gasify oil without trouble.

Alternative Methods of Oil Gasification

A variation of the process described was applied on a C.V.R. installation in South America after earlier trials in Scotland. If the balance of coal and oil supplies changed further, it might merit further attention for use here.

Instead of using one or more of the retorts in the bench, which then cannot be used for normal carbonisation of coal, special vertical retorts were built in chambers connected to the waste gas flues. These retorts were some 18 ft. long, made in cast iron, and were fitted with an oil injection device at the top. The oil spray passed downwards through the retort, partly vapourising and cracking, and the gases were withdrawn through a bottom offtake. Unvapourised oil passed through a grid in the cool bottom of the retort and was re-circulated. The grid retained any oil-cake, which was then discharged at intervals. It was found necessary to re-circulate the once-run oil in a separate stream, as any attempt to mix it with fresh oil resulted in the formation of a heavy sludge which caused blockages in the system.

The purpose of this installation was to effect a partial replacement of expensive imported coal by cheap locally produced oils. The oil gas was used to enrich the coal gas from the retorts in the main bench which was run under low calorific value conditions and resulted in a saving of 10% of the coal previously used.

The process ran for some 18 months with excellent results, but was finally displaced by the advent of a new oil refinery nearby, which supplied tail gases for use in enriching the low calorific value coal gas.

Producer Gas Dilution

Although the thermal output from a continuous vertical retort carbonising a given coal remains substantially constant over most of the normal range of calorific values, it is sometimes possible to increase the output by diluting rich coal gas with a suitable diluent. A considerable number of articles have appeared in the technical Press dealing with this subject both from the economic and technical angles. The best diluent likely to be available is blue water gas, as its comparatively high calorific value and low specific gravity enable greater volumes to be used in admixture with coal gas than is the case with producer gas.

Water gas plant is not usually available on the smaller works, but it is not uncommon to find a considerable reserve capacity in the producers which supply fuel gas for heating the settings. This reserve may be tapped off very simply and cheaply and provides another means of increasing the gas output to meet peak loads.

Fig. 6 shows a simple arrangement which is working successfully in a number of works. A connection taken from a convenient point in the producer gas flues is sealed in a pot A. The depth of seal may be varied by means of the adjustable overflow B, and is usually worked at about ½-in. w.g. (static). It serves as a simple non-return valve to prevent the possibility of coal gas feeding back to the producer flues in the event of exhauster stoppage. Having passed the seal, the producer gas travels up a tower C in which it is scrubbed by spray from the sprays D in the tower cover. Either water or liquor may be used on the sprays, which serve to cool and de-dust the gas. The outlet from the scrubber is connected through a valve E to any suitable point on the inlet-condenser side of the coal gas foul mains.

Although not essential, it is convenient to have a simple flow gauge, of the differential pressure type, so fitted that it may be read from the valve access position. The readings are only used for comparative purposes during valve adjustment —final control is determined by the calorific value of the mixed gas.

Coal in the Irish Gas Industry

Before the last war the coals used by the industry in this country came very largely from Scotland and the most northerly coalfields in England, and the quality was generally high.

The Second World War brought about profound changes in the position, particularly in the Republic. The amount and quality of coal fell rapidly and by 1941 it had entirely disappeared from the domestic market in the south, and supplies to the gas industry were severely restricted. Gas rationing became necessary in many places, but this was due more to lack of coal than to any inability of the plants to handle the atrocious substances which went by that name.

A typical example of a so-called Durham slack handled during war conditions is shown by the following analysis.

Moisture	4.61%
Ash	44.42%
V.O.M.	22.06%
F.C.	28.91%

Slurries dredged from coaling basins, washery gums, and wet duff which arrived as a thick sludge were not uncommon, and great difficulty was encountered in trying to handle these substances on conveying plant. The effect of these 'coals' on continuous vertical carbonising plant varied widely, the only constant one being that of the invariably high ash content on producer operation. Pneumatic drills were commonly used to remove clinker from the fires, and in several works fire cleaning degenerated into a process of emptying and re-lighting. Water gas plant was unable to handle the fuel, and small quantities of metallurgical coke, imported under special licence, had to be reserved for these units.

Obviously these conditions made the maintenance of adequate temperatures in the retort settings a very difficult task. Producer gas was deficient in both quantity and quality, and the author has painful recollections of the difficulty encountered in trying to turn a retort bench over to gaseous firing using 'producer gas' with a carbon monoxide content of 4%.

The low temperatures in the settings accentuated the difficulties of successfully carbonising the coal. The greatest problem was that of variability for, with no stocks to work from, cargoes had to be elevated directly to the bunkers as and when they came in. A cargo of strongly caking and swelling Durham slacks might follow directly on one of the non-caking duff. The fine hot powder which took the place of coke in the retorts when carbonising this duff ran out through the extractors like sand, leaving the upper part of the retort full of hanging charges of partly carbonised coal, with empty spaces beneath. The shock caused by the dropping of one of these charges was sometimes sufficient to drop all the others in the setting, and the cumulative effect produced explosions which occasionally caused serious damage.

Whenever it was possible to keep to one general type of coal for even a day or two at a stretch, the vertical retort gave little trouble; although gas output was very low, the mechanical processes of carbonisation proceeded quite normally.

When it is realised that coal supplies followed the pattern outlined above for many years, and that the condition persisted as daily routine for the whole period, great credit is

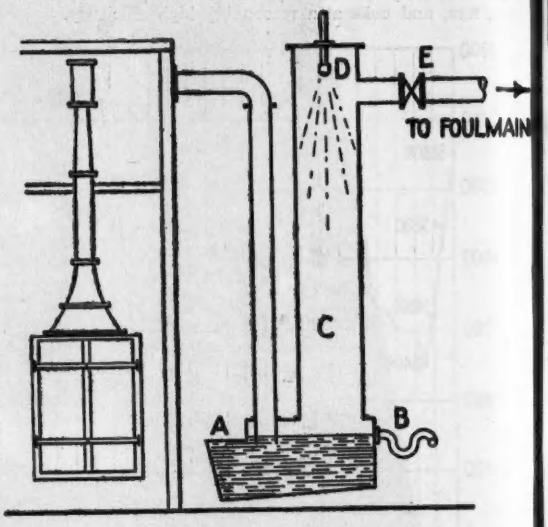

Fig. 6.—Arrangement for producer gas dilution.

due to Irish engineers for the way in which they tackled their problems. This difficult period also demonstrated the continuous vertical retort's capability of making gas from coals of all types, and its ability to withstand an enormous amount of unavoidable abuse.

Since the war, supplies of Scottish coal to Ireland have been severely restricted and many undertakings have had to change over to Yorkshire and Midland coals. Many of these delivered here are of excellent quality, and thermal yields and outputs have responded well.

A typical analysis of Yorkshire coal representing the weighted average of deliveries to a particular works over the first six months of this year is given below.

Yorkshire Coal:	Moisture	3.43%
	Ash	5.61%
	V.O.M.	33.12%
	F.C.	57.84%

Most of the Scottish coals received before the restrictions were applied were very easy to handle in continuous vertical retorts, and ease of carbonisation compensated for slightly inferior gasmaking results. As a result, the change-over to Yorkshire coal was not immediately welcomed by some operators, but when once the necessary difference in technique had been appreciated and adjustments made, the installations without exception, responded well and are returning excellent results. In certain cases these could be further improved by an upward change in the low calorific values which were settled to suit the earlier coals.

(*Continued on page 231*)

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Carbonisation of Peat

The use of peat as a raw material for the manufacture of gas is a subject which has received considerable attention in this country where large indigenous supplies are available. During the war attempts were made to carbonise peat in continuous vertical retorts, but the results were very disappointing. The material is bulky and difficult to handle mechanically and gives rise to severe chemical attack on the types of refractory brickwork used in normal carbonising plant.

The crude gas has a very high wax content which forms stiff emulsions with the liquor and causes blockage in the foul gas system. The char which is formed in place of coke is weak and powdery, difficult and unpleasant to handle, and useless as a fuel.

Continuous vertical retorts can be modified to enable them to carbonise peat in a more satisfactory manner. During the German occupation in France, when peat was clearly the only fuel likely to be available in some areas for many years, this was actually done and quite reasonable results were obtained. The most important modification was the transfer of the gas offtake from the top to the bottom of the retort. This increased the amount of cracking to which the gas was subjected, so reducing the wax content and causing partial agglomeration of the char by the deposition of heavy products of the cracking process.

One of the greatest difficulties in the use of peat as a fuel or raw material is the high water content even after prolonged drying. This results in considerable heat loss in the gases and vapours from the carbonising process, and unless it can be recovered in some way the thermal efficiency of the process is low. At the same time, the economic attraction of being able to carbonise a home-produced material is very real, and the problem will continue to receive much thought from both sides of the industry.

The Future

The basic principles of carbonisation have advanced very little from the days when the early Arab philosophers first heated substances out of contact with air in clay retorts—we are still bringing about the thermal decomposition of a natural substance by means of heat externally applied.

Heat transfer between solid and solid, except when dealing with thin films in close contact, can never be efficient. In all the familiar types of carbonising plant we heat one side of a clay vessel quite efficiently by radiation and convection from hot gases, and we have improved the conductivity of the walls of the vessel, but once inside the wall the efficiency of heat transfer drops rapidly. Coal is in itself a poor conductor, and a jumbled structure of lumps, spaces, and plastic regions is worse still. The process could be improved by generating heat electrically in the charge itself—this has been done in Scandinavia, and it may be that the future will see development along these lines in cases where electricity is available locally at a very cheap rate.

In the more immediate future there seems a greater hope of improving the basic principles of carbonisation by transferring heat directly from a hot gas to the solid charge. In this way a high transfer efficiency could be obtained which would reduce the present need for the steep temperature gradients which overheat part of the charge and products. The continuous vertical retort even now goes a short way towards this method of heating, as there is no doubt that the hot gases evolved in the lower zones carry out a most important heating function as they pass through the cooler charge above. It is possible that the effect could be increased by re-circulating gases upwards through the hot coke at the retort base, but the gas would have to be capable of withstanding high temperature without undue decomposition.

Up to the present, no good case has been made against the superiority of continuous vertical retorts over other types of carbonising plant for serving large and medium units of a two-fuel gas industry. The relative values of their advantages are not the same in the very small works as in the large, but improved efficiency and good working conditions are factors which are of common interest to both. The large number of small installations already installed, and the excellent results obtained in thermal yield, low labour charges, and flexibility show that C.V.R. installations are an attractive proposition for any works with an output above 50 mill. cu.ft. per annum.

Without doubt the greatest obstacle in the way of the wider use of very small C.V.R. installations is that of cost. The retort is the only money-earning unit in any carbonising installation; the rest of the plant is so much financial dead weight which has to be supported on the retort's earnings. The capital cost of small installations is therefore relatively high per therm of gas made, and it is not easy to reduce it significantly by producing an austere plant within the present limits of design. On the other hand, it is easy to inflate the price very rapidly by any undue elaboration of plant or retort house.

It is felt that there is a future for a small simple type of carbonising plant which, while producing technical results far superior to those of a small horizontal installation, will not strive for any higher efficiency than can be obtained at a reasonable price. Working conditions and a generally presentable appearance must be studied, but without going to the degrees of elaboration which have appeared from time to time in recent years.

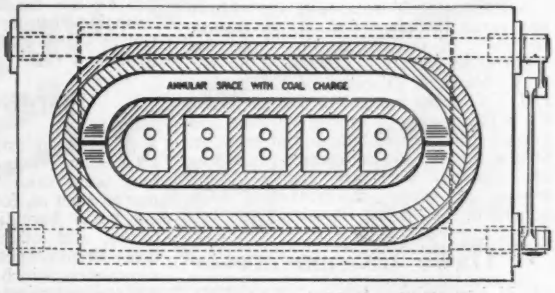


Fig. 7.—Section through annular retort.

Experimental work is proceeding on a type of plant which embodies an unusual feature of carbonising practice in that a thin coal charge is heated from one side only. The retort is in horizontal cross-section an annulus between a battery of heating flues arranged centrally and an outer retaining wall. The arrangement is shown in Fig. 7.

During carbonisation the charge is static, and is later dropped in one stage into a cooling chamber from which it is finally discharged in a cool state. The temperature of the outer wall remains very low during normal working, as all heat reaching it must pass through the charge—heat losses from the shell are, therefore, very low and the use of silica for the wall is unnecessary. The flue battery is the only part of the setting in which silica is used, and as a result the cost of the plant is reduced, and it may be heated up from cold comparatively rapidly.

One interesting feature is the almost complete elimination of the bottom pressure in the retort which has always been a troublesome feature of static vertical retorts. The gas undergoes little thermal degradation, and as a result has a very high calorific value during the early stages of a charge. The experimental retort is comparatively short, and is charged and discharged manually, and the cost of a commercial unit would probably show savings over one of the more traditional designs. It must be emphasised that this unit is at present purely experimental, and that it is not exclusively a small works project.

Extolling the attractions of vertical retorts to members of the Irish gas industry is a case of preaching to the converted, but it is hoped that this paper may prove interesting by showing the engineers of undertakings of such widely assorted size something of the variations in design and arrangement of the C.V.R. installations existing in this country, and by suggesting certain lines of development for the future.

TRADE NEWS

Compoflex

THERE has long been a need for a complete advisory and supply service covering flexible tubing and hoses of all kinds, and this has been filled by Compoflex Co., Ltd., who on September 30 held a 'house warming' at their new London showrooms, 26, Grosvenor Gardens, S.W.1.

The showrooms form the nucleus of an entirely new service to industry; here samples and installation photographs of hundreds of different 'flexibles' can be seen. The company's representatives will also be available to advise manufacturers on all matters concerning the use of flexible tubing and hose. Thus for the first time every requirement can be satisfied from one source.

A short speech welcoming the visitors was made by Lieut.-Col. R. H. Rohde, Secretary of the Engineering Industries Association, who was introduced by Mr. J. V. Klein, a Director of Compoflex, Ltd. Of special interest to the gas industry is the display of tubing for town and bottled gas, such as butane and propane. Sole agents for the company's gas tubing are Ascot Gas Water Heaters, Ltd., several of whose representatives were present at the 'house warming.'

Dawe Instruments

AN impressive catalogue of precision electronic instruments for communication, photographic, and industrial application has been issued by Dawe Instruments, Ltd., whose slogan is 'A Dawe instrument for every measurement.' Of more than 100 instruments described in the catalogue it would be difficult to say which have the greatest appeal to the gas industry; several are of importance on the works, and others have obvious application in connection with the industrial utilisation of gas. Among resisters, condensers, and inductors there is, for instance, the Type 303 impedance comparator for production testing, grouping, and adjusting inductors, condensers and resistances at a frequency of 10 Kc/s. Gauges include the Type 1101 ultrasonic thickness gauge for measuring the thickness of materials by means of high frequency sound waves. Seven instruments are listed for measuring and regulating vibration and noise, and there is a whole range of equipment for industrial photography. Four instruments dealing with moisture determination are the Type 2100 moisture-in-timber meter for the rapid determination of moisture in timber by a resistive method covering a range of 7-40%; the Type 2102 moisture comparator for comparing the moisture content of granular and fibrous materials; the Type 2103 clamp type electrode for testing veneers and thin woods with the 2100 moisture-in-timber meter; and the Type 2104 drytester for measuring and controlling the moisture content of textile materials in terms of the moisture regained during the drying process.—*Dawe Instruments, Ltd., 130, Uxbridge Road, Hanwell, W.7.*

Sunvic Controls

TO introduce the range of Sunvic 'Nullmatic' process control instruments, Sunvic Controls, Ltd., are holding a series of demonstrations in London and the provinces. The range of pneumatic instruments now being manufactured by them at their Harlow factory, together with a demonstration model, will be exhibited at these demonstrations. Also, for those interested, the film entitled 'Principles of Automatic Control,' produced by the Instrument Society of America, will be shown.

This programme will familiarise instrumentation engineers with the range of Sunvic 'Nullmatic' instruments, and provide a suitable opportunity for discussion thereon. These demonstrations will be the forerunners of a publicity campaign having the same object.—*Sunvic Controls, Ltd., 10, Essex Street, Strand, W.C.2.*

Detel Products

MANY industrial processes unfortunately create conditions where ordinary paint cannot satisfactorily be employed such as, for example, where there are heavy humidity, acids and alkaline fumes, and other corrosive agents; in these circumstances it is essential to find a covering which will afford complete protection against corrosion.

The Corrosion Committee of the British Iron and Steel Research Association has been doing considerable research into the subject sponsored by the Cambridge University Metallurgical Laboratory. Dr. Evans, a leading expert on corrosion, confirmed the usefulness of special zinc-rich paints in resisting corrosion. The findings showed that for the coating to be effective it should contain a sufficiently high percentage of zinc pigment to ensure direct electronic contact between the metallic particles in the dry paint film. This will not occur unless the metallic zinc constitutes 92%-95% by weight of the dried paint film.

Detel Products, Ltd., pioneers of chlorinated rubber coatings (paints) fully anticipated these requirements, as their Detel metal undercoat depends in the main on its high metallic zinc content (over 96%) for protection of iron and steel surfaces. Many new varieties are now available for release to the home market.

There are many uses to be found for Detel in the gas industry. It is extensively employed in the protection of gasholders and all structural steel work against the onslaught of sulphur dioxide, sulphuretted hydrogen, ammonia and its salts, steam, etc., and also for proofing concrete purifiers against gas.

Detel is a tough and very flexible non-inflammable material which is unaffected by acids, sea or fresh water, alcohol, oil, and petrol. It consists of chlorinated rubber and other synthetic resins of a similar character dissolved in a mixture of high flash aromatic hydrocarbons (100°F.) in which is ground a suitable pigment. The coating dries by evaporation and not by oxidation, so that drying is rapid. It is unaffected by cold and will withstand dry temperatures up to 230°F., although special compositions are available for use where the temperature rises to between 500°-600°F.

For quick, easy, and economical use D.M.U. is particularly applicable, as it is applied like an ordinary paint on to a clean iron or steel surface and needs no skilled labour to operate. It dries quickly, in approximately 2 to 6 hours, to a metallic zinc coating, light grey in colour, which builds up on exposure and becomes harder and more adherent. A top coat of any good oil or synthetic paint can then be applied over it when dry if desired.—*Detel Products, Ltd., South Ruislip, Middlesex.*

Trade Publications

CLAYTON, SON & CO., LTD., announce that the address of their London office has been changed to: Thorncliffe, Oakfield Road, Ashtead, Surrey. (Tel.: Ashtead 502.)

* * *

W. J. JENKINS & CO., LTD., of Retford, have published a leaflet illustrating a number of recent contracts for intermittent chamber ovens, coke grading plants, and D.B. stoking machines at various gasworks in this country.

* * *

GAS SCRUBBERS.—A leaflet issued by the Power Gas Corporation, Ltd., of Stockton-on-Tees describing the P-A scrubbers—cyclonic and venturi—for use in blast furnaces, open hearth, and a variety of other plants.

* * *

VISCO WATER COOLING.—A revised edition of a booklet first published in 1947 by the Visco Engineering Co., Ltd., of Stafford Road, Croydon, Surrey, containing illustrated examples of some of the firm's water cooler contracts, together with meteorological information and technical tables of water flow velocities, power consumption for various heads, and losses due to friction.

* * *

ALLIED IRONFOUNDERS, LTD., have published in loose leaf form in a strong serviceable binding an excellent set of information sheets covering the firm's cookers, fires, stoves, boilers, baths and sinks. These information sheets are issued simultaneously in connection with the book 'Heat: Cooking, Heating and Hot Water in Low Cost Houses,' which is intended for architects, surveyors, and all concerned in the provision of the type of house recommended in the second supplement to the 'Housing Manual 1949, Houses 1952.' Complete with a wide selection of house plans and line drawings, this well-produced book aims to suggest lines of approach to the problem of providing the heat services for such homes.

Space Heating Lectures.—By arrangement with the East Midlands Gas Board, lectures on the principle and installation of the 'Sapphire' balanced flue heater were recently given by Mr. R. Boorn, Sales Manager of Cowper Penfold & Co., Ltd., to the fitting and sales staff at the Wellingborough and Northampton gas undertakings.

SCRAP GAS METERS WANTED

Top prices paid—Collection arranged from anywhere in U.K.

Sell to those best suited to deal with them.

Sell to — MITCHAM SMELTERS LIMITED
Rometal Works, Red House Road,
Mitcham Road . . . CROYDON . . . Surrey.
Tel: THOrnton Heath 6101. (Private Branch Exchange).

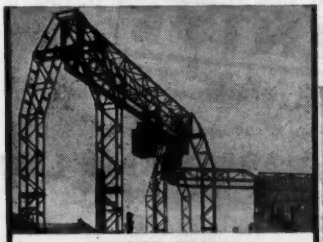
Truck Loads to our own private siding, Beddington Lane, Southern Region.

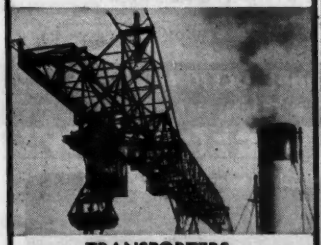
COAL AND COKE SCREENING & SIZING PLANTS.

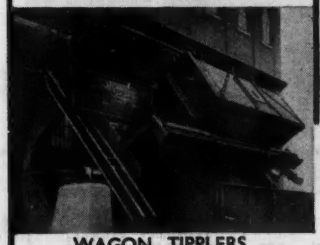
RETORT SETTINGS PRODUCERS, FURNACES REPAIRS.

GOODALL, CLAYTON & Co. LTD.
LEEDS.

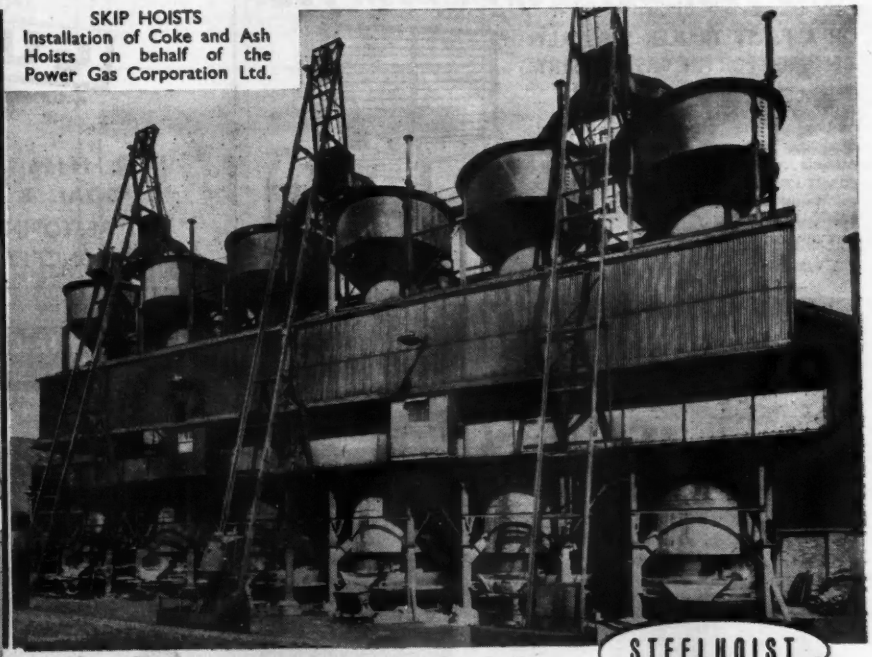
CONVEYORS, ELEVATORS, BUNKERS, ROOFS, HOISTS, Etc.


TELPHER PLANT


TRANSPORTERS


WAGON TIPPLERS

SKIP HOISTS
Installation of Coke and Ash Hoists on behalf of the Power Gas Corporation Ltd.



Plant for the movement of material in bulk

STEELHOIST

STRACHAN & HENSHAW LTD
Steelhoist Works, Bristol 2. Tel: 77664.

THE NEW A&M OPTIONAL METER

We confidently present our latest coin meter available for pennies and shillings, sixpences and shillings, or half-crowns and shillings and readily adjustable for single coin operation at the gas engineer's option.

The mechanism embodies the fruits of many years' research, every part is precision made to close limits, range-plates are interchangeable - absolutely - one meter with another.

ALDER & MACKAY LTD

NEW GRANGE WORKS, EDINBURGH

Also at
BRADFORD · MANCHESTER · LONDON · BELFAST · NEWCASTLE-ON-TYNE · CORK

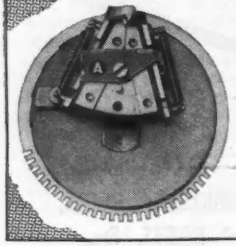


Fig. 1, on left, shows the back of the range-plate adjusted for optional coin. The swinging plate 'A' defies any attempt to insert a coin when one is already in the other slot.

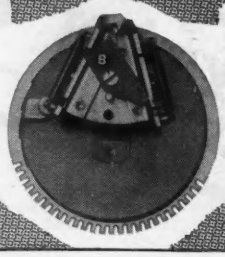


Fig 2, on left, shows the plate positioned to admit sixpences only. To make this adjustment, loosen screw 'B' and tighten it again with the plate in the new position.

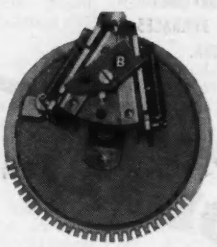


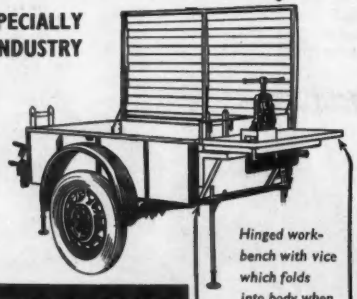
Fig. 3, on left, shows the plate positioned for shillings only. To make this adjustment, remove screw 'B', reverse the plate as shown and replace the screw.

Take your workbench with you

ON A PRATT TRAILER SPECIALLY DESIGNED FOR THE GAS INDUSTRY

This latest addition to the range of PRATT trailers embodies all the recognized qualities of the other models... sound design and construction, strength at minimum weight, excellent springing, stability, good carrying capacity.

WRITE FOR DETAILS



Hinged workbench with vice which folds into body when travelling or not in use.

THE PRATT ENGINEERING COMPANY
NORTHALLERTON, YORKS. TELEPHONE: NORTHALLERTON 142

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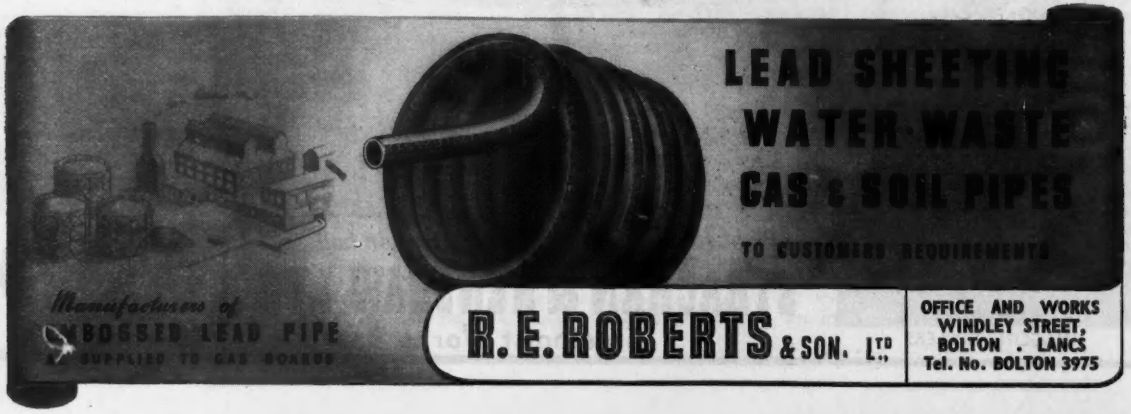
PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH
for

LININGS FOR STEEL COAL & COKE HOPPERS
RESTORING DISINTEGRATED CONCRETE STRUCTURES etc.

Get in touch with us for engineering data and estimates

THE GUNITE CONSTRUCTION CO. LTD.
WESTERN HOUSE, HITCHIN, HERTS. Tel. 571.



PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire :- 52/- per annum; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone: Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. Telegrams: Gasking, Fleet, London.

COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.

See our Advertisement Next Week.

REAVELL & CO. LTD. IPSWICH.

CASES FOR BINDING

Quarterly Volumes of the "Gas Journal."

5/- each, post free

Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

OXIDE

DUTCH AND DANISH BOG ORE SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED

ESTABLISHED 1873

PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

"KLEENOFF" *

THE COOKER CLEANER

"KLEENOFF"

FIBRE BRUSHES
RUBBER MOPS

KETTLE DESCALER *

(NEW "KLEENOFF" PRODUCT)

* For resale to the public, and in bulk for Works use.

BALE & CHURCH, LTD.

7, CROMPTON WAY, CRAWLEY, SUSSEX.

PATENTS

KINGS PATENT AGENCY, LTD. (Director, B. T. King, A.I.M.E., Patent Agent). Advice, Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C.4. 'Phone: City 6161.

FIRE!

WHERE'S YOUR

NU-SWIFT?

The World's Fastest Fire Extinguishers —for every Fire Risk

Pressure-operated by sealed CO_2 Charges

NU-SWIFT LTD · ELLAND · YORKS

In Every Ship of the Royal Navy

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

ENGINEER required experienced in Heating Up and Operation of Carbonising Plants, knowledge of routine gasworks tests an advantage. All applications in confidence to W. J. Jenkins & Co., Ltd., Beehive Works, Retford, Notts.

NORTH WESTERN GAS BOARD

SAFETY OFFICER—

FYLDE, PRESTON, BLACKBURN AND BURNLEY/COLNE GROUPS

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. IX (£595-£695 per annum).

The successful applicant will be required to carry out the routine inspection of works and premises to investigate and report on accidents and to advise on all matters designed to promote safe working conditions. Applicants should possess a knowledge of Engineering and/or general requirements of the Factories Acts.

The appointment is pensionable and the successful applicant may be required to pass a medical examination.

Detailed applications, giving the names of two referees, should reach the Secretary, North Western Gas Board, 60, Whitworth Street, Manchester, 1, within fourteen days.

SCOTTISH GAS BOARD

FIFE GROUP

DUNFERMLINE DISTRICT

TECHNICAL ASSISTANT (PRODUCTION)

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT to above District.

The salary will be up to Grade A.P.T. VI, Provincial 'A' maximum of which is £555 with placing according to qualifications and experience.

Candidates should have experience of Vertical Retorts, Carburetted Water Gas Plant Manufacture and of Gas Compressors.

The successful candidate may be required to pass a Medical Examination and to join such contributory superannuation scheme as the Board may adopt.

Applications endorsed 'Technical Assistant' giving full particulars of age, qualifications and experience, together with *copies* of three recent Testimonials, or the names and addresses of three referees to whom reference can be made, to be lodged with the undersigned not later than November 3, 1952.

DAVID L. DICKSON,
Group Manager.

Scottish Gas Board,
Gas Offices,
Grange Road,
Dunfermline.
October 14, 1952.

(Classified advertisements continued on Supplement 4)

APPOINTMENTS VACANT (ctd.)

WALES GAS BOARD

PONTYPOOL UNDERTAKING

GAS FITTERS

APPLICATIONS are invited from FIRST CLASS GAS FITTERS for employment at the above Undertaking.

Preference will be given to candidates possessing the City and Guilds full Technological Certificate in 'Gasfitting.'

The rates of pay will be in accordance with J.I.C. schedules for Provincial 'A' Undertakings.

Applications stating age, qualifications with full details of experience and training to be addressed to J. Powdrill, Esq., General Manager, Wales Gas Board (Pontypool Undertaking), Gas Offices, Hanbury Road, Pontypool.

WALES GAS BOARD

PONTYPOOL UNDERTAKING

SHIFT SUPERINTENDENT

APPLICATIONS are invited for the position of SHIFT SUPERINTENDENT at the above Undertaking. Candidates should preferably have had experience on Woodall-Duckham Continuous Vertical Retorts, and have had technical training in all gasworks ancillary plant and equipment. Preference will be given to candidates holding the Institution of Gas Engineers' Higher Grade Certificate in Gas Engineering. The salary will be within Grade VI—Administrative, Professional and Technical of the National Joint Council for Gas Staffs—Provincial 'A' £475-£555 per annum, plus housing accommodation, rent free, which will be provided by the Undertaking. The successful candidate will be required to pass a medical examination.

Applications stating age, qualifications and experience with two recent Testimonials should be posted to J. Powdrill, Esq., General Manager, Wales Gas Board (Pontypool Undertaking), Gas Offices, Hanbury Road, Pontypool, not later than fourteen days after the appearance of this advertisement.

WALES GAS BOARD

PONTYPOOL UNDERTAKING

TECHNICAL ASSISTANTS/RELIEF

SHIFT SUPERINTENDENTS

APPLICATIONS are invited from suitable young men between the ages of 20/25 to be trained for the above appointments.

Applicants should have had previous experience in the laboratory of a Gas Works, or be conversant with the control of Gas Works Plant, or have a sound knowledge of mechanical engineering. They should have received a good general education to enable them to complete The Institution of Gas Engineers' examinations. Educational facilities are available and allowances for part time courses will be granted.

The starting salary will be according to age, qualifications and experience.

Applications, stating age, education and experience, with the names of two referees, should be posted to J. Powdrill, Esq., General Manager, Wales Gas Board (Pontypool Undertaking), Gas Offices, Hanbury Road, Pontypool, to reach him within fifteen days of the appearance of this advertisement.

EAST MIDLANDS GAS BOARD

SHEFFIELD & ROTHERHAM DIVISION

ASSISTANT DIVISIONAL MAINS ENGINEER

APPLICATIONS are invited for the position of ASSISTANT DIVISIONAL MAINS ENGINEER who will be centred on Sheffield.

Applicants should have had considerable practical experience of Mains and Service laying and have thorough knowledge of the planning and design of all types of Distribution projects. They should be Corporate Members of the Institution of Gas Engineers or possess an equivalent qualification.

The salary will be in accordance with Grades A.P.T. IX or X of the National Salary Scales for Gas Staffs up to a maximum of £745 per annum and the initial placing will be dependent upon the qualifications, experience and ability of the applicant.

The post is superannuable and the successful applicant may be required to pass a medical examination.

Applications, stating age, qualifications, and giving details of experience, together with the names of two referees, should be addressed to reach the undersigned not later than November 12, 1952.

C. C. Wood,
Divisional General Manager.

Gas Offices,
Commercial Street,
Sheffield, 1.
October 14, 1952.

EAST MIDLANDS GAS BOARD

LEICESTER & NORTHANTS DIVISION

SHOWROOM SUPERINTENDENT—

NORTHAMPTON UNDERTAKING

APPLICATIONS are invited from suitably qualified persons for the position of SHOWROOM SUPERINTENDENT at the Northampton Undertaking.

Applicants must have had considerable experience of Showroom supervision, appliance sales and consumer service, and be well versed in window and general display practice.

The appointment will be made in Grade A.P.T. VI (£475-£555 per annum) and the commencing salary will be in accordance with the experience and qualifications of the person appointed.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications stating age experience and qualifications, and giving the names of two referees should be addressed to Mr. J. Corrigan, Senior Group Manager, 45, Abington Street, Northampton, to be received not later than November 3, 1952.

H. B. Taylor,
Divisional General Manager.

Gas Offices,
Millstone Lane,
Leicester
October 13, 1952

EAST MIDLANDS GAS BOARD

NOTTS & DERBY DIVISION

DERBY UNDERTAKING—

MECHANICAL AND ELECTRICAL SUPERINTENDENT

APPLICATIONS are invited for the position of MECHANICAL & ELECTRICAL SUPERINTENDENT at the Litchurch Works of the Derby Undertaking.

Applicants must have sound practical mechanical and electrical experience in the maintenance of mechanical handling equipment, steam engines and compressors, turbo-alternators, rectifiers, vertical retorts installations and C.W.G. plants and workshop organisation. Corporate membership of the Institute of Mechanical Engineers or Electrical Engineers would be an advantage.

The appointment will be made within Grade A.P.T. XI of the National Scales, rising to a maximum of £795 per annum. The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, stating age, training, experience, qualifications and present position, together with the names of two referees, should be forwarded to the undersigned not later than October 31, 1952.

K. L. Pearce,
Divisional General Manager.

East Midlands Gas Board,
Notts & Derby Division,
Friar Gate,
Derby.

EAST MIDLANDS GAS BOARD

LEICESTER & NORTHANTS DIVISION

DISTRIBUTION ENGINEER—

NORTHAMPTON GROUP

APPLICATIONS are invited from suitably qualified persons for the position of DISTRIBUTION ENGINEER, Northampton Group. Applicants should possess the Higher Grade Certificate in Gas Engineering (Supply) of the Institution of Gas Engineers, or its equivalent, and should preferably hold the Diploma of the Institution.

Applicants must have had considerable experience in the organisation and control of a modern Gas Distribution Department and must be competent to supervise an extensive mains improvement project which will involve the use of low, medium and high pressure mains systems, with district holders.

Public Street lighting will be under the control of the Distribution Engineer.

The post is in Grade A.P.T. XII, Provincial 'A' (Salary range £720-£845) of the National Salary Scales, and the commencing salary will be in accordance with the qualifications and experience of the person appointed.

The position is superannuable and the successful candidate may be required to pass a medical examination.

A house is available, subject to a service occupation agreement.

Applications stating age, qualifications and experience and giving the names of two referees should be addressed to the undersigned to be received not later than Thursday, November 6, 1952.

H. B. Taylor,
Divisional General Manager.

Gas Offices,
Millstone Lane,
Leicester.
October 17, 1952.

NORTHERN GAS BOARD

WESTERN GROUP

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT in the Workington Division.

The salary will be in accordance with Grade VI, Provincial 'A' of the National Salary Scales—£475 to £555 per annum, initial placing according to qualifications. A house to rent will be available to the successful applicant.

Applications giving particulars of training, qualifications and experience, together with the names of two referees, should reach the Group Chief Engineer, Gas Works, Workington, within fourteen days from the publication of this advertisement.

NORTHERN GAS BOARD

SUNDERLAND DIVISION

ASSISTANT WORKS MANAGER

APPLICATIONS are invited for the position of ASSISTANT WORKS MANAGER at the Hendon Works of the Sunderland Unit. Applicants should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers and should have experience in the control and operation of Horizontal Retorts, C.W.G. manufacture, and Gas Works Plant generally.

The salary will be within A.P.T. Grade VII, Provincial 'A' (£525/605) of the National Salary Scales, according to experience and qualifications, and conditions in accordance with the Agreement of the National Joint Council for Gas Staffs.

The successful candidate will be required to pass a medical examination and the appointment will be subject to the provisions of such Superannuation scheme as may be adopted by the Board.

Applications stating age, experience and qualifications, giving the names of two referees, should be addressed to the undersigned within fourteen days of the issue of this advertisement.

W. O. Kirkwood,
Divisional General Manager.

Fawcett Street,
Sunderland.
October 16, 1952.

NORTHERN GAS BOARD

DARLINGTON DIVISION

SHIFT ENGINEER

APPLICATIONS are invited for the position of SHIFT ENGINEER at the Darlington Unit of the Northern Gas Board. Applicants should have received a sound training in Gas Manufacture.

The position provides an opportunity for acquiring practical experience in the operation and control of G.-W. Vertical Retorts, C.W.G. plant, and modern ancillary plant.

Conditions of service will be in accordance with the National Joint Council for Gas Staffs Agreement, Salary Provincial 'A' Scale, Grade A.P.T. V, £445 to £525 per annum, initial placing according to experience.

The successful applicant will be required to pass a medical examination and to subscribe to such superannuation scheme as may be adopted by the Board.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to Charles Hindle Esq., Sub-Divisional Manager, Northern Gas Board, Darlington Division, Gas Offices, John Street, Darlington, not later than October 31, 1952.

F. Wilson
Divisional General Manager.

PLANT FOR SALE & WANTED

FOR SALE: In perfect condition—auxiliary lighting installation for large departmental store. Installation consists of two 107 h.p. Crossley Gas Engines with 3½ h.p. compressor motor running from main gas supply, each engine operating one G.E.C. direct current continuously rated compound generator 220 r.p.m., 70 kW, 230 volt, 304 amp., also one only 230 volt, 300 watt., thermostatically controlled Streamline Oil Filter and in addition all Switch Gear at present in the Power House. This installation, while now disconnected, is available for immediate demonstration. Apply No. 128, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

WANTED:—REGULAR SCRAP GAS METERS AND PARTS. Best prices paid. Offers to:—Mitcham Smelters Ltd., Red House Road, Croydon, Surrey. *Tel.*: THOrnton Heath 6101 (Private Branch Exchange).

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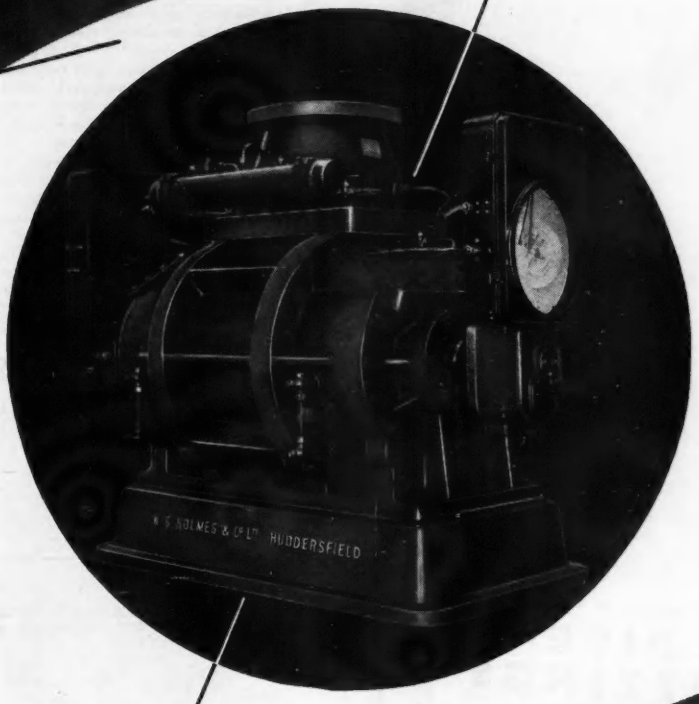

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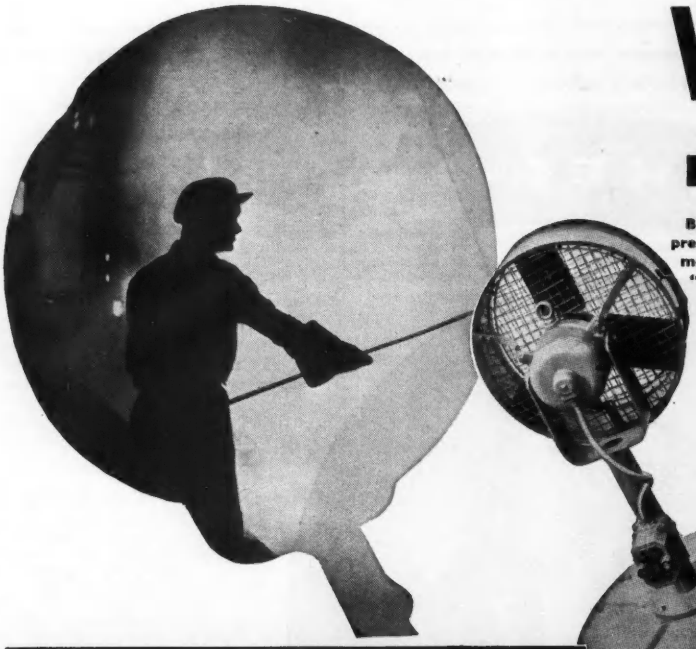

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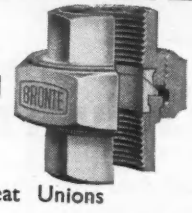

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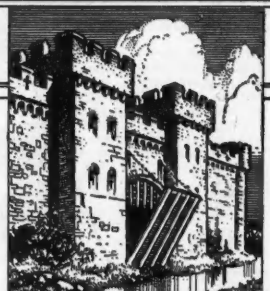

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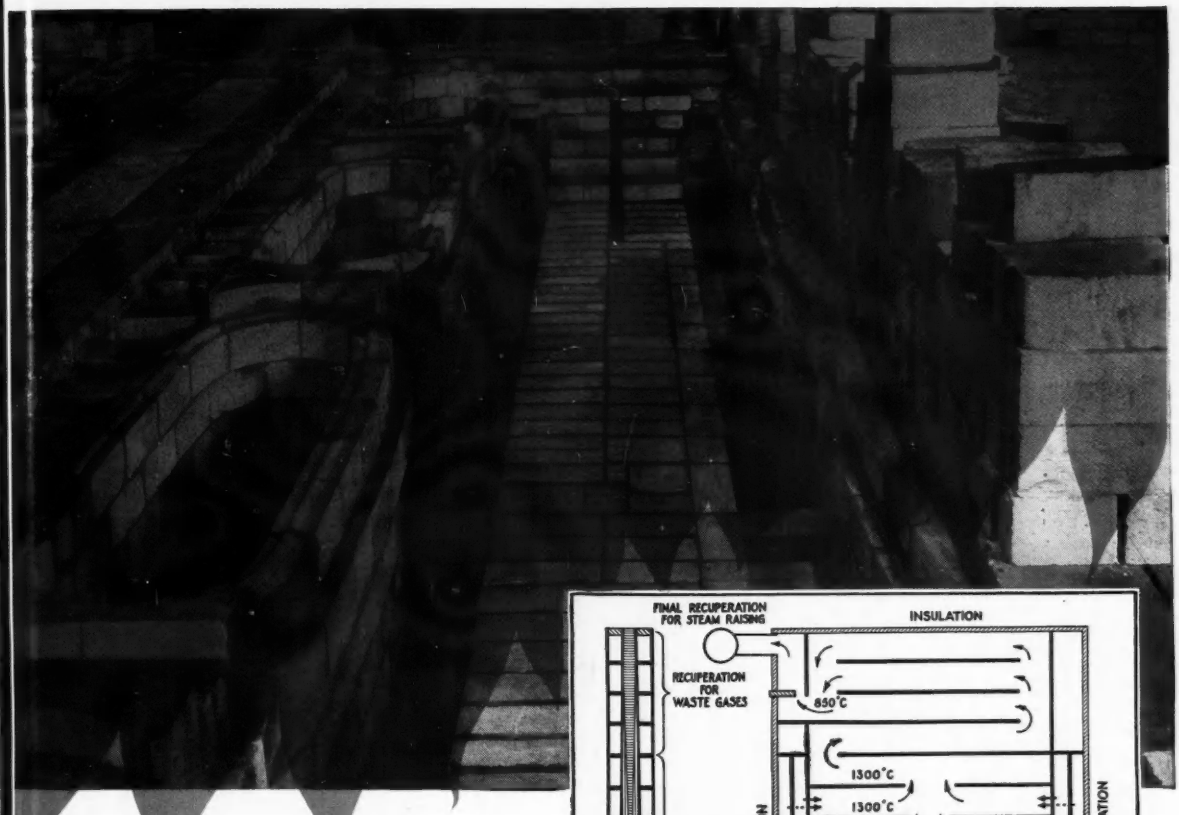
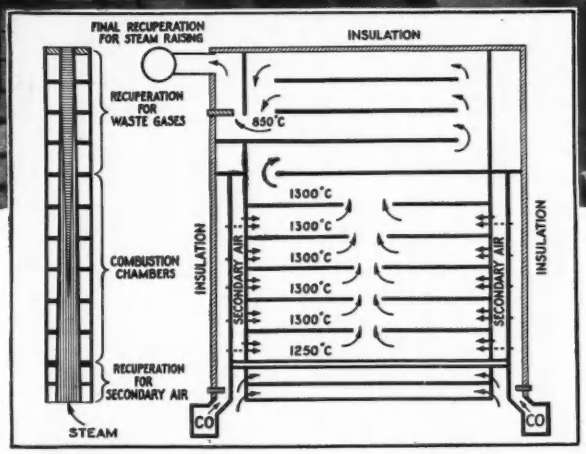
"Balanced Heating"

MEANS ECONOMICAL GAS—MAKING





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* *Illustration shows a "Balanced Heated" setting under construction.*

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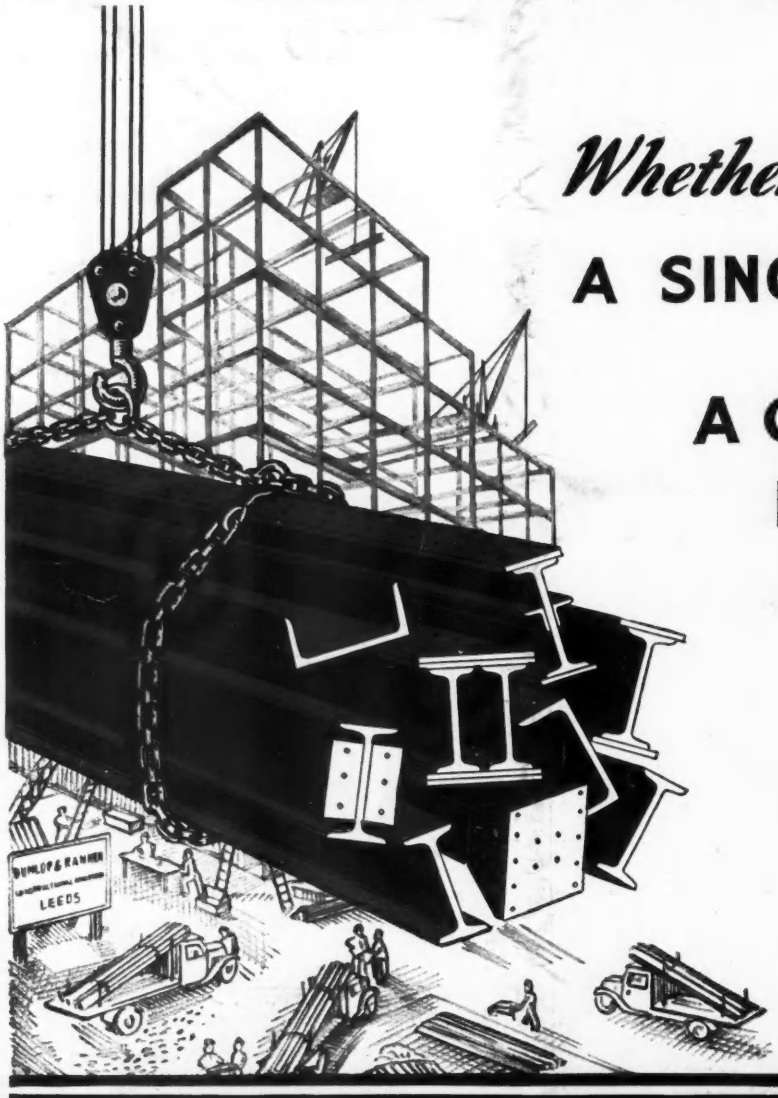

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